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WATER RESOURCES DEVELOPMENT IN LOUISIANA

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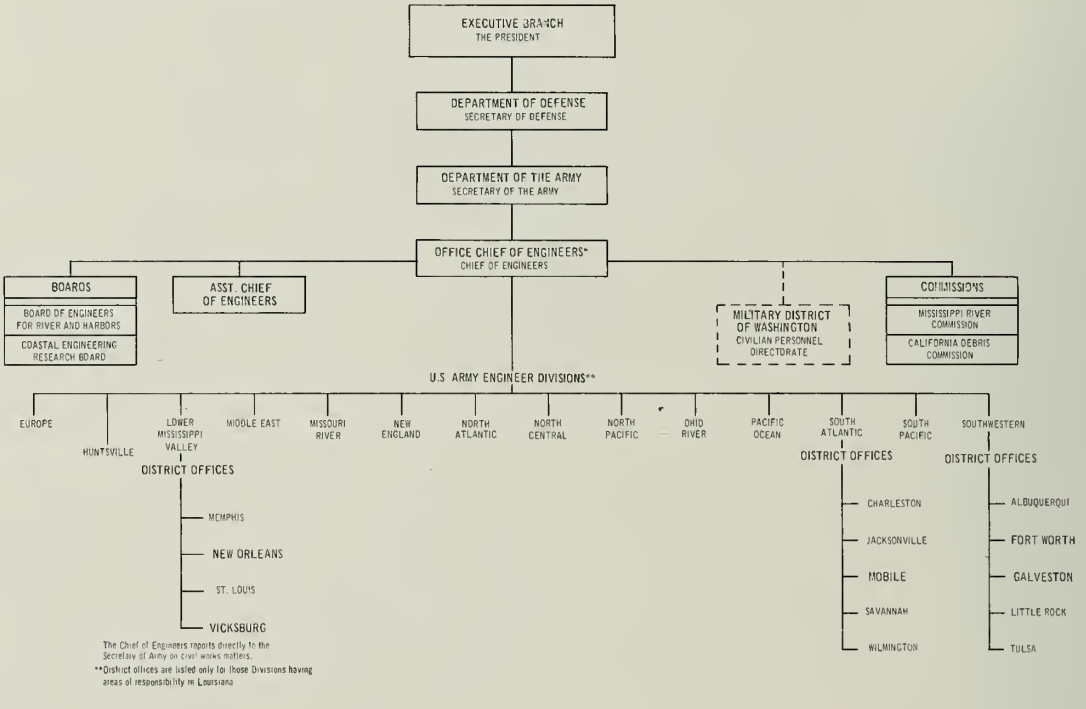
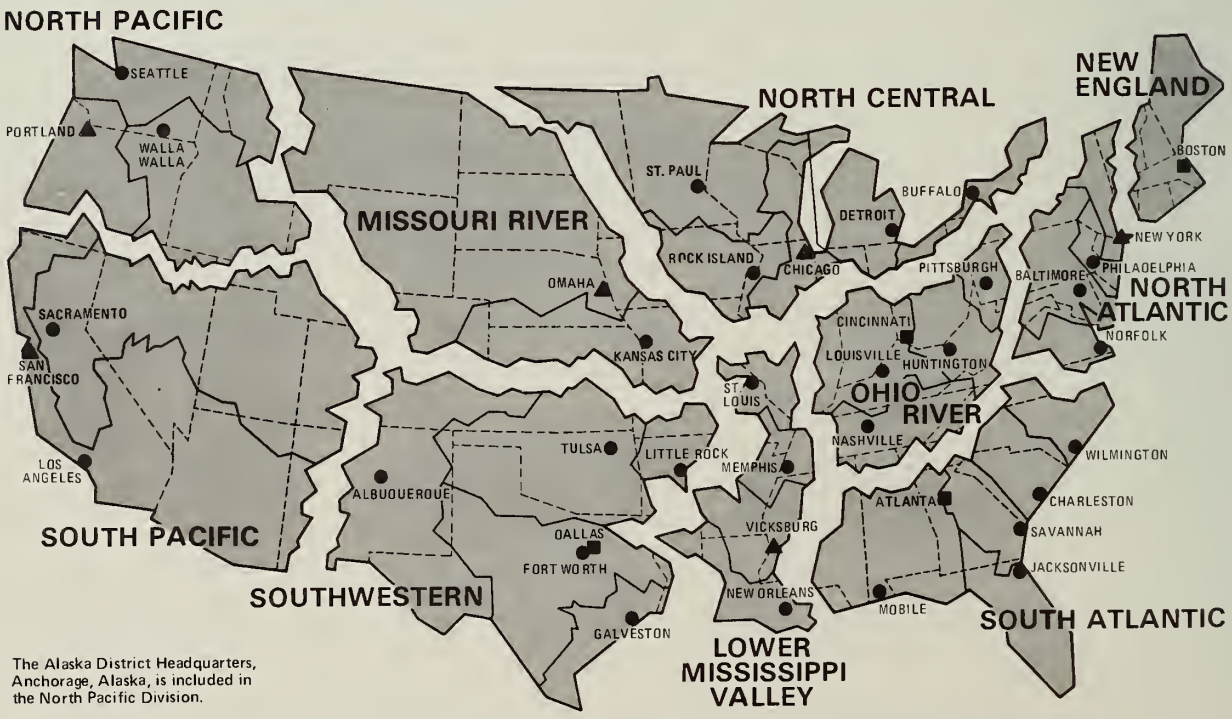
BY THE U.S. ARMY CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY
LOWER MISSISSIPPI VALLEY DIVISION
VICKSBURG, MISSISSIPPI

ABBREVIATED ORGANIZATION CHART



U. S. ARMY CORPS OF ENGINEERS
DIVISIONS AND DISTRICTS for CIVIL WORKS ACTIVITIES



The Alaska District Headquarters, Anchorage, Alaska, is included in the North Pacific Division.

The State of Hawaii and Islands in the Pacific are included in Honolulu District, Pacific Ocean Division, with Headquarters at Honolulu, Hawaii.

The Territory of Puerto Rico and adjacent Islands is included in Jacksonville District, South Atlantic Division.

TO OUR READERS:

Throughout history, water has played a dominant role in shaping the destinies of nations and entire civilizations. The early settlement and development of our country occurred along our coasts and water courses. The management of our land and water resources was the catalyst which enabled us to progress from a basically rural and agrarian economy to the urban and industrialized nation we are today.

Since the General Survey Act of 1824, the US Army Corps of Engineers has played a vital role in the development and management of our national water resources. At the direction of Presidents and with Congressional authorization and funding, the Corps of Engineers has planned and executed major national programs for navigation, flood control, water supply, hydroelectric power, recreation and water conservation which have been responsive to the changing needs and demands of the American people for 152 years. These programs have contributed significantly to the economic growth of our country and to the well-being of the American people.

Today, the activities of the Corps of Engineers in water resources management, under the direction of the Executive and Legislative branches of the Federal government, continue to support national goals and objectives. These include conservation of our water resources, protection of our wetlands, non-structural solutions to flood-damage control problems, total water management in metropolitan areas, flood plain management, and the preservation and enhancement of the quality of our environment for future generations.

This booklet describes the past, current, and proposed activities of the Corps of Engineers in your state. I trust that you will find it informative, interesting, and useful.

J. W. MORRIS
Lieutenant General, USA
Chief of Engineers

BUILDING TOMORROW TODAY

Within the boundaries of the State of Louisiana, five Districts are responsible for projects and activities of the Corps of Engineers as described in this pamphlet. Their geographic boundaries are shown on the map, page iii. Jurisdiction over District activities is the responsibility of the Division offices. The Mississippi River Commission exercises special jurisdiction over improvements for navigation on the Mississippi River and flood control both on this river and within its alluvial valley. Further information on particular projects and activities discussed herein may be obtained by addressing the appropriate office listed below.

President,
MISSISSIPPI RIVER COMMISSION
P. O. Box 80, Vicksburg, Miss. 39180

Division Engineer, U. S. Army Engineer Division,
LOWER MISSISSIPPI VALLEY
P. O. Box 80, Vicksburg, Miss. 39180

District Engineer
U. S. Army Engineer District, New Orleans
P. O. Box 60267, New Orleans, La. 70160

District Engineer
U. S. Army Engineer District, Vicksburg
P. O. Box 60, Vicksburg, Miss. 39180

Division Engineer
U. S. Army Engineer Division, SOUTHWESTERN
1114 Commerce Street, Dallas, Tex. 75202

District Engineer
U. S. Army Engineer District, Fort Worth
P. O. Box 1600, Fort Worth, Tex. 76101

District Engineer
U. S. Army Engineer District, Galveston
P. O. Box 1229, Galveston, Tex. 77551

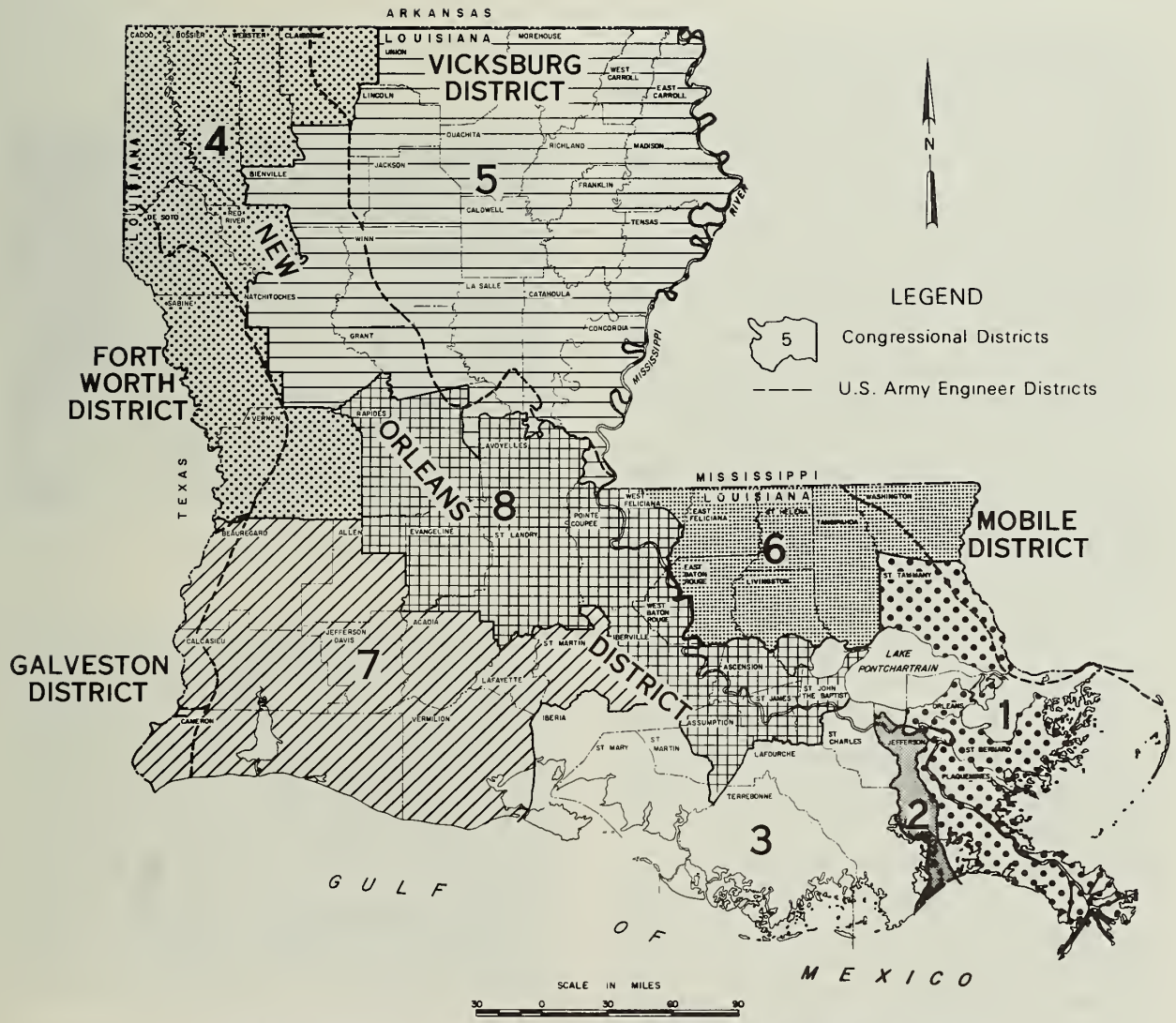
Division Engineer
U. S. Army Engineer Division, SOUTH ATLANTIC
510 Title Building, 30 Pryor Street, S. W.
Atlanta, Ga. 30303

District Engineer
U. S. Army Engineer District, Mobile
P. O. Box 2288, Mobile, Ala. 36628

COVER PHOTOGRAPH

The cover photograph was taken by C. R. Brownell, M.D., Mayor of Morgan City, St. Mary Parish, Louisiana.

WATER RESOURCES DEVELOPMENT
BY THE U. S. ARMY CORPS OF ENGINEERS



CONGRESSIONAL AND U.S. ARMY ENGINEER DISTRICTS OF LOUISIANA

FOREWORD

This pamphlet provides current information on the scope and progress of water resources development within the State of Louisiana by the United States Army Corps of Engineers and the Mississippi River Commission. The Introduction describes briefly the Corps' and Commission's civil functions, and their roles in carrying out the Civil Works Program for water resources development. Information is given on the status of various projects authorized for construction by the Congress, and survey investigations under way are described.

In arranging the material presented in the pamphlet, the State has, for ease of reference, been divided into twelve sections as shown on the index map located on the back cover. Expanded maps for each section are included at the beginning of the textual material for the section involved.

The twelve sections of the State, as defined for this pamphlet, are:

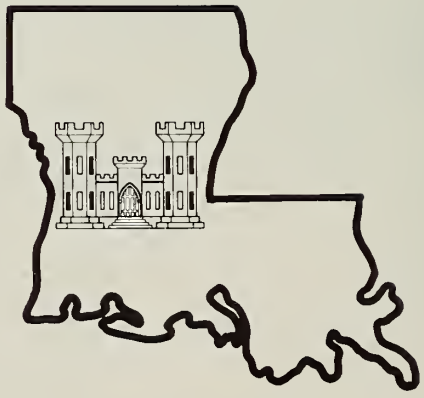
1. The Mississippi River Basin, which includes the area between the Mississippi's banks and/or main-line levees, plus the watersheds of those east bank tributaries between Baton Rouge and the east-west Louisiana-Mississippi State line.

2. The Atchafalaya Basin generally comprises the area between the East and West Atchafalaya Basin protection levees, which extend from the latitude of the town of Simmesport to the Gulf of Mexico.

3. The Ouachita Basin, which includes the tributary area of the Ouachita River in Louisiana.

4. The Tensas River Basin, which includes the tributary area of the Tensas River in Louisiana.

5. The Red River Basin, which includes the tributary area of the Red River down to the vicinity of Alexandria.



PUBLIC PARTICIPATION

DREDGING MAINTAINS NAVIGABLE DEPTHS

6. The Pearl River Basin, which includes the tributary area of Pearl River in Louisiana.

7. The Lake Pontchartrain Basin, which generally includes the drainage area of Lake Pontchartrain in Louisiana.

8. The Mississippi River Delta Area to the East Atchafalaya Basin protection levee, which includes the coastal area between Morgan City and the Louisiana-Mississippi State line.

9. Vermilion River and Bayou Teche Basins, which include the tributary area of Vermilion River and Bayou Teche.

10. The Mermentau River Basin, which includes the tributary area of Mermentau River.

11. The Calcasieu River Basin, which includes the tributary area of Calcasieu River.

12. The Sabine River Basin, which includes the tributary area of Sabine River in Louisiana.

Projects that traverse several basins are described in the text under the heading "Coastalwide projects."

Because the Civil Works activities of the Corps of Engineers are organized by river basins rather than State boundaries, the work in Louisiana comes within the jurisdiction of more than one Division and District. Boundaries of the various Districts and Divisions involved are identified on the map located on page iii. Additional information on specific water resources development projects, and on the responsibilities of the United States Army Corps of Engineers and the Mississippi River Commission may be obtained from the offices listed on page ii.

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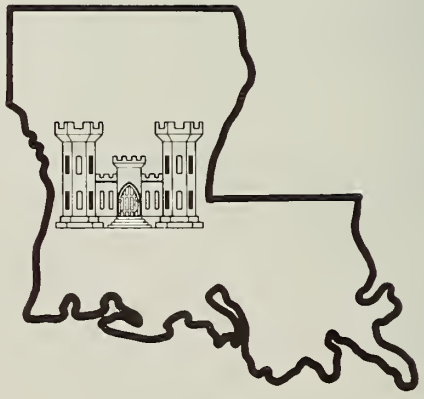
INTRODUCTION

CIVIL FUNCTIONS OF THE CORPS OF ENGINEERS

The U. S. Army Corps of Engineers acts as engineer consultant to Congress and most of the Corps water resources projects are developed by specific Congressional authorization. When local interests feel that a need exists for construction or improvement of a water resources project they petition their representative in Congress. The Senator or Congressman then requests the appropriate Congressional committee to direct the Corps of Engineers to investigate and furnish a recommendation in the matter under consideration.

Comprehensive surveys of suggested projects are made to determine their economic and engineering feasibility and necessity. In making these surveys the Corps of Engineers cooperates fully with all other Federal agencies concerned, as well as with State and local authorities.



In the initial stages of investigation public meetings are held to advise on the nature and scope of the study, to open lines of communication between interested citizens and agencies, and to ascertain the needs, views, and desires of local citizens as to the extent and character of the improvements desired. Public meetings are also held during the course of each study in the plan formulation stage when all alternative solutions are reasonably known but before a plan has been tentatively selected. A major purpose of this meeting is to present the results of preliminary studies, including the advantages of the various alternatives, and to further develop public views and desires particularly as they relate to the

various alternatives. Normally another public meeting is held in the late stages of the study after the solution has been tentatively selected and before the report is completed. The procedure for holding public meetings has been established to ensure, to the maximum practicable extent, that all viewpoints are considered since the desires of the people concerned are fundamental in making final recommendations to Congress.

The report of the District Engineer is submitted through the Division Engineer to the Board of Engineers for Rivers and Harbors or the Mississippi River Commission and to the Chief of Engineers concurrently. The Board performs the review function except for works pertaining to the alluvial valley of the Mississippi River for which review is by the Commission. Public meetings may be held prior to final action by the Board or Commission when non-Federal interests request such meetings and the responsible reviewing authority concurs. Finally the report is transmitted to Congress. Action is then taken by the Committee on Public Works of the legislative body requesting the study. If authorized by Congress, the project still requires Congressional appropriations to become a reality. (See illustration on page xii.)

In addition to the development of projects designed to meet specific localized problems, the Corps of Engineers undertakes planning for long-range coordinated development of the water resources of entire river basins. Basin-wide planning presents a challenge and many problems. Such studies are comprehensive in scope and have as their purpose the formulation of long-range plans for integrated and optimum development of water resources. Such investigations include consideration of (a) navigation; (b) flood control; (c) the environmental, social, and economic effects; (d) generation of hydroelectric power; (e) domestic and industrial water supply; (f) water quality management and improvement; (g) protection of fish and wildlife; (h) recreation; (i) preservation or enhancement of especially valuable or outstanding archeological, historical, biological, and geological resources and ecological systems; and (j) other potential uses of water which may enter into an overall plan. Federal and State agencies concerned contribute their specialized knowledge and skills to the investigation through active participation in the study.

Before a project is recommended to Congress, it must survive a selection process based on consideration of all viable alternative measures for accomplishing the desired results. This ensures that efficient use is made of the natural resources involved, and that full advantage is taken of opportunities for restoring, preserving, and enhancing the quality of the environment. Finally, for any proposal recommended for Congressional authorization, economic benefits must exceed economic costs, and a specific determination must have been made that the project is engineeringly sound and will most effectively meet the needs to which it is responsive.

★ ★ ★ ★ ★

COMPREHENSIVE RIVER BASIN DEVELOPMENT

The Corps of Engineers, in cooperation with other Federal and local agencies, is engaged under the aegis of the Water Resources Council in the development of a series of long-range framework plans for development of the river basins in the Nation. Framework plans will inventory and specific studies will seek to determine the best program and projects to meet the Nation's needs for navigation improvements, flood control, major drainage, irrigation, hydroelectric power, water supply, water quality control, and fish and wildlife conservation and enhancement. These plans will serve as a basis upon which future projects will be proposed to Congress for authorization.

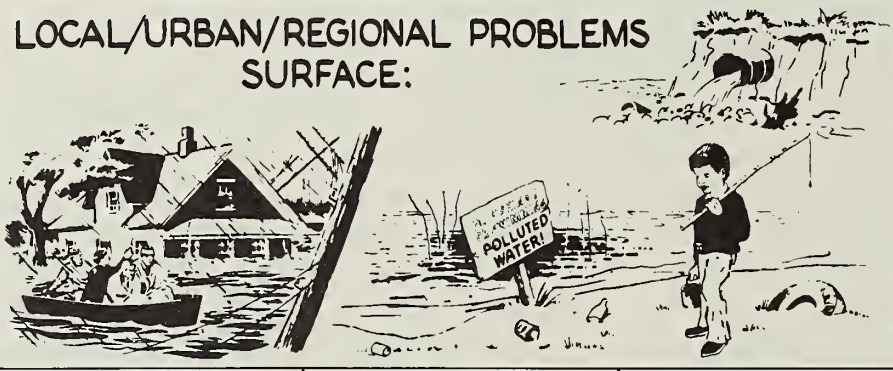
★ ★ ★ ★ ★

NAVIGATION

The Corps of Engineers is responsible for the construction, maintenance, and operation of all Federal river and harbor projects. The Corps is also responsible for administering the Federal laws for the

THE MECHANISM BY WHICH PROJECTS ARE

LOCAL/URBAN/REGIONAL PROBLEMS SURFACE:



PEOPLE ASK CONGRESSIONAL REPRESENTATIVES TO AUTHORIZE U.S. ARMY CORPS OF ENGINEERS ASSISTANCE IN PROBLEM SOLVING

1

CONGRESS AUTHORIZES STUDY

2

SECRETARY OF THE ARMY

↓

DIRECTS

↓

CHIEF OF ENGINEERS
DIVISION ENGINEER
DISTRICT ENGINEER (DE)

3

FOLLOWING APPROPRIATION OF FUNDS, DE CONDUCTS INITIAL PUBLIC MEETING:

IDENTIFY AND DISCUSS LOCAL PROBLEMS & ALTERNATIVES EMPHASIZING NATIONAL ECONOMIC EFFICIENCY & ENVIRONMENTAL QUALITY

4

DE

- INVESTIGATES ALL ALTERNATIVES
- PERFORMS LIMITED
  - TECHNICAL FEASIBILITY STUDIES
  - ENVIRONMENTAL ASSESSMENTS
- PROPOSES MOST FEASIBLE SOLUTIONS

5

FORMULATION STAGE PUBLIC MEETING

DISCUSS MOST FEASIBLE ALTERNATIVES

6

DE

- INVESTIGATES FORMULATION STAGE ALTERNATIVES
- PERFORMS DETAILED
  - TECHNICAL FEASIBILITY STUDIES
  - ENVIRONMENTAL ASSESSMENTS
- SELECTS PLAN FOR PROPOSAL
- DISTRIBUTES DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) (15 DAYS PRIOR TO LATE STAGE PUBLIC MEETING)
- MAKES DRAFT FEASIBILITY REPORT AVAILABLE

7

LATE STAGE PUBLIC MEETING

TENTATIVE PLAN PROPOSED AND DISCUSSED

8

DE

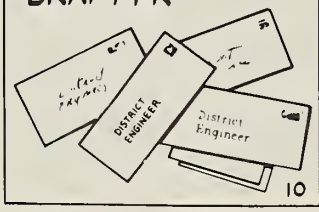
FORWARDS TO STATES/ AGENCIES

FEASIBILITY REPORT (FR)

9

PUBLIC:

RESPONDS TO DRAFT EIS AND DRAFT FR



10

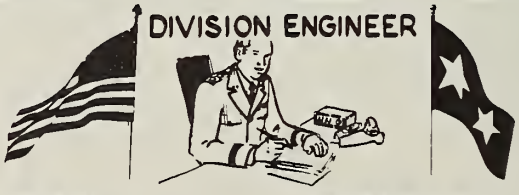
DE

- REVIEWS COMMENTS TO DRAFT EIS AND FR
- PREPARES RECOMMENDED
  - REVISED DRAFT EIS
  - FINAL FR
  - STATEMENT OF FINDING (SOF)

FORWARDS TO →

11

DIVISION ENGINEER



- REVIEWS
- MODIFIES AS APPROPRIATE
  - FINAL FR
  - REVISED DRAFT EIS
- INDORSES SOF
- ISSUES PUBLIC NOTICE

REQUESTING PUBLIC VIEWS BE SENT TO BOARD OF ENGINEERS FOR RIVERS AND HARBORS (BERH)

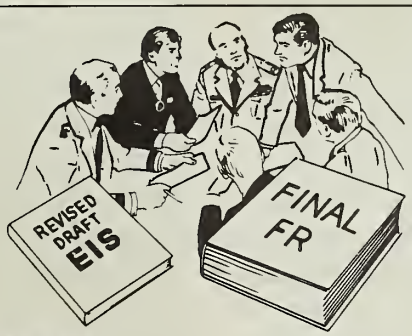
- FORWARDS RECOMMENDATIONS TO BERH

12

CONCEIVED, AUTHORIZED AND CONSTRUCTED

BERH

- CONSIDERS VIEWS OF
  - PUBLIC
  - STATES
  - AGENCIES
- REVIEWS AND PROVIDES RECOMMENDATIONS
  - REVISED DRAFT EIS
  - FINAL FR
- TRANSMITS TO CHIEF OF ENGINEERS



13

CHIEF

- REVIEWS BOARD REPORT
- PREPARES HIS DRAFT RECOMMENDATIONS
- DISTRIBUTES FOR OUTSIDE REVIEW
  - REVISED DRAFT EIS (PUBLIC, STATES, FEDERAL DEPARTMENTS) (45-DAY REVIEW PERIOD)
  - FR (GOVERNORS, FEDERAL DEPARTMENTS) (90-DAY REVIEW PERIOD)

14

CHIEF

- REVIEWS RECEIVED COMMENTS
- MODIFIES REPORT AS APPROPRIATE
- PREPARES FINAL EIS

15

CHIEF

- FORWARDS RECOMMENDATIONS TO SECRETARY OF THE ARMY FOR CONSIDERATION
  - FINAL REPORT
  - FINAL EIS
  - SOF

16

SECRETARY OF THE ARMY

- REVIEWS
- COORDINATES WITH OMB
- PREPARES HIS RECOMMENDATIONS
- FORWARDS
  - FINAL EIS, SOF (CEQ, PUBLIC)
  - FINAL FR, FINAL EIS, SOF (CONGRESS)

17

PROJECT AUTHORIZATION

- HOLDS HEARINGS
- INCLUDES IN WATER RESOURCES DEVELOPMENT BILL OR OTHER LEGISLATION

PRESIDENT SIGNS

18

OMB

- REVIEWS CORPS BUDGET
- SUBMITS TO CONGRESS

19

PROJECT FUNDING

- CONGRESS INCLUDES IN APPROPRIATIONS BILL
- PRESIDENT SIGNS

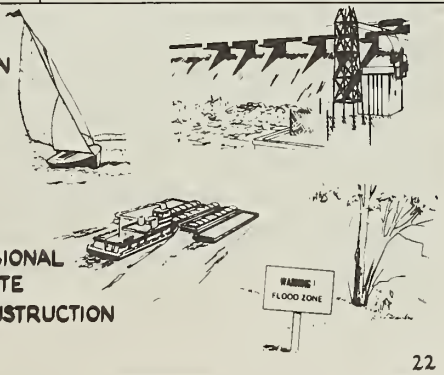
20

LOCAL INTERESTS GUARANTEE TO FULFILL OBLIGATIONS REQUIRED BY LAW (e.g., REAL ESTATE, COST SHARING, MAINTENANCE, OPERATION, FLOOD ZONING)

21

DE

- FORMULATES PRE-CONSTRUCTION PLANNING GENERAL DESIGN MEMORANDA (GDM)
  - UPDATES EIS AS REQUIRED
  - ISSUES PUBLIC NOTICE AND CONDUCTS AT LEAST ONE PUBLIC MEETING
- OBTAINS ADDITIONAL CONGRESSIONAL AUTHORIZATION AS APPROPRIATE
- INITIATES AND COMPLETES CONSTRUCTION
- OPERATES AND MAINTAINS



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preservation and protection of the navigable waters of the United States. These laws include alteration or removal of obstructive bridges; removal of sunken vessels or other obstructions endangering navigation; and establishing anchorage grounds, special anchorage areas, danger zones, dumping grounds, restricted areas, fishing areas, and harbor lines. The Corps of Engineers also compiles annual statistics on commercial cargoes. These data are highly important in determining the need for and justification of the improvement and maintenance of rivers and harbors for commerce and navigation. They are also of value to commercial and shipping concerns, various Federal and local agencies, and others interested in transportation.

The objectives of navigation improvements include the following: (a) to assist in the development, conduct, safety, and efficiency of waterborne commerce—interstate as well as foreign; (b) to meet the needs of recreational boating; (c) to promote the production and harvest of seafood; (d) to enhance environmental quality; (e) to encourage the expansion of existing and the development of new industrial and agricultural production; (f) to remove regional and sectional handicaps due to poor accessibility; (g) to enhance fish and wildlife resources; and (h) to enhance social well-being.

★ ★ ★ ★ ★

FLOOD DAMAGE REDUCTION

The Federal interest in flood damage reduction began in the alluvial valley of the Mississippi River in the 19th century when the interrelationship of flood control and navigation became apparent. The impact of disastrous floods affecting wide areas caused the Federal interest in flood damage reduction to be extended in 1936 to the entire country. It was recognized that the Federal Government should participate in the solution of problems affecting the public interest when these problems are too large or complex to be handled by State or local organizations.

The purpose of flood control works is to regulate flood flows and thus prevent flood damage. The largest single project is that for flood protection of the alluvial valley of the Mississippi River below Cape Girardeau, Missouri. This area is under the jurisdiction of the President, Mississippi River Commission. Although the Commission was created by an Act of Congress in June 1879, it was not until after the disastrous flood of 1927 that it began to play a vital role in flood control. The Flood Control Act of 1928, and subsequent amendments, establishes the authority and defines the responsibility of the Commission in the alluvial valley.

In addition, the Flood Control Act of 1944 provides that "flood control" shall include major drainage of land. Both flood control and drainage are accomplished with reservoirs or local protection works, or with combinations of both.

Reservoirs constructed for flood control storage often include additional storage capacity for multipurpose uses, such as for the conservation of water for municipal and industrial use, navigation, irrigation, development of hydroelectric power, conservation of fish and wildlife, and recreation.

Local protection works are turned over to non-Federal authorities for maintenance, as are small reservoirs which have only localized effects. Other reservoirs are operated and maintained by the Corps of Engineers.

The Chief of Engineers, through the Secretary of the Army, is authorized to provide information to other Federal agencies, States, and local communities, to aid them in planning use and regulation of flood plain areas. These services were authorized by the Flood Control Act of 1960 and are available upon request (see page xix "Flood Plain Management Services").

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HURRICANE PROTECTION

Hurricanes have been the cause of catastrophic loss of life and property along the Atlantic and Gulf

coasts. In some cases tidal flooding can be prevented or reduced by protective structures, including dams and barriers in estuaries, with openings for navigation. Other measures include raising dunes and constructing dikes, walls, and breakwaters. There are also places where increasing the height of natural beaches affords effective protection.

Under the authorization contained in Public Law 71, 84th Congress, 1st Session, approved June 1955, the Corps of Engineers is conducting general investigations of the eastern and southern seaboards of the United States in order to identify problem areas and to determine the feasibility of protection. Works found to be justified are recommended to Congress for authorization and subsequent construction.

★ ★ ★ ★ ★

ENVIRONMENTAL CONSIDERATIONS

The need for evaluation of environmental effects and values is a project purpose in all the Corps' planning efforts. The basis for this is the National Environmental Policy Act of 1969 (PL 91-190) which declared:

> *A continuing policy of the Federal Government...to use all practical means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony and fulfill the social, economic and other requirements of present and future generations of Americans.*

As a result of this Act, all Federal agencies, including the Corps of Engineers, are required to evaluate thoroughly all environmental effects of any contemplated action. Public review of such findings is also required. Section 102 of the Act requires preparation of a detailed environmental impact statement (EIS) for every report recommending Federal action significantly affecting the quality of the human environment. Prior to making any detailed statement, the agency that is responsible for the preparation of the environmental impact statement is required to consult and obtain the views of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved.

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URBAN STUDIES

In response to changing and newly emerging national development priorities which focus on the Nation's urban society and urban-oriented problems, the Corps of Engineers' role has been expanded to more fully address urban water and related land resources problems and provide for active participation in Urban Comprehensive Planning with those charged locally with urban planning responsibilities. The objective of the Urban Studies Program is to develop, in conjunction with the public, a range of alternative plans which not only offer a realistic prospect for solving specific urban water resources problems, but, equally important, also have the potential to serve as a catalyst for solving other related urban problems. In satisfying this objective, urban water resources planning must be consistent with the national objectives regarding national and regional economic development, and the quality of the environment.

The established criteria for the development of such plans require that each plan be formulated to:

- address the specified water resources problems, issues, and concerns of the regional publics within the study area
- be responsive to expressed desires and preferences
- be flexible to accommodate changing economic, social, and environmental patterns and changing technologies
- integrate with and be complementary to other urban development and management programs
- be fully coordinated with affected public agencies at all levels
- develop through an orderly structure an open planning process

- be implementable with respect to financial and institutional capabilities and public consensus
- where appropriate, be certifiable by applicable State and Federal agencies

The specific kinds of problems which will receive attention by the Corps of Engineers under this program include, but are not necessarily limited to the following: urban flood control and flood plain management; municipal and industrial water supply; wastewater management; bank and channel stabilization; lake, ocean, and estuarine restoration and protection; recreation management and development at Civil Works projects; and regional harbor and waterway development.

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HYDROELECTRIC POWER

Power development in multiple-purpose projects under the jurisdiction of the Chief of Engineers is collateral to the major objectives of flood control and navigation. In a series of laws and resolutions dating back to the River and Harbor Act of 1909, Congress has directed the Corps of Engineers to give consideration in its reports to various water uses, including hydroelectric power. Provisions for hydroelectric power are thus a part of proper comprehensive planning for water resource development.

As a result of various plans and recommendations, Congress has authorized many multiple-use projects that involve hydropower development. In some cases, projects primarily for power development have been authorized when these projects were a part of recommended basin plans. The cost of the power projects is reimbursed by revenues from sale of the power. The Southwestern Power Administration, an agency of the Department of Interior, markets the power.

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WATER SUPPLY

Water supply is of vital interest to the national economy and security, and full attention is given to this subject in the planning of river basin works. Under Section 6 of the Flood Control Act of 1944, the Secretary of the Army is authorized to make contracts with States, municipalities, private concerns, or individuals for domestic and industrial uses of surplus water which may be available at Corps of Engineers projects. The Water Supply Act of 1958, as amended, makes further provision for water supply storage in Federal navigation, flood control, irrigation, or multiple-purpose projects. The extent of State and local participation and cost sharing in all new projects or modifications is set forth in Section 301 of the 1958 Act.

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WATER POLLUTION CONTROL

Under Public Law 87-88, 87th Congress, the Corps of Engineers may, in planning reservoir projects, consider the inclusion of storage for regulation of streamflow to control water quality, but not as a substitute for sewage treatment. Cost of such storage may be all Federal if the benefit is sufficiently widespread.

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BEACH EROSION CONTROL

Beach erosion control is concerned with the restoration and preservation of eroded shores. The development of a plan for protection of non-Federal properties is accomplished by cooperative effort between the United States and an appropriate State or local element. The cost of the study is borne by the Federal Government.

The Federal contribution toward construction of remedial shore protection works, authorized as a result of the study, is limited by law to a maximum of one-half of the construction cost except in special circumstances. The remedial work may include periodic beach nourishment with sand fill at suitable intervals. Maintenance of the restored beach is a non-Federal responsibility.

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REMOVING WATERHYACINTH AND AQUATIC PLANT CONTROL

The Chief of Engineers is authorized by Section 302 of the River and Harbor Act of 1965 to provide for control and progressive eradication of certain obnoxious aquatic plant growths. Local interests are required to pay 30 percent of the cost and to hold and save the Federal Government free from claims that may occur as a result of these operations.

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FISH AND WILDLIFE CONSERVATION

The Fish and Wildlife Coordination Act of 1958 (Public Law 624, 85th Congress) permits the Corps of Engineers to include facilities to offset damages to fish and wildlife which may occur as a result of development of an authorized project.

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RECREATION

Facilities for picnicking, swimming, boating, fishing, camping, and sight-seeing are included in projects where appropriate. In developing plans for recreational facilities the cooperation of the State or other concerned public bodies is required under terms of the Federal Water Projects Recreation Act of 1965 (Public Law 89-72).

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PERMIT PROGRAM

The Corps of Engineers exercises regulatory authority in navigable waters of the United States primarily under the River and Harbor Act of 1899 and the Federal Water Pollution Control Act of 1972. Permits issued by the Corps of Engineers are required for work or structures in navigable waters of the United States and for the discharge of dredged material or fill into navigable waters, or the transportation of dredged material for the purpose of dumping into ocean waters. Structures such as piers, wharfs, and docks and activities such as channel excavation, placement of riprap, groins, buoys, mooring devices, cables, pipes, and the like require permits.

The Corps of Engineers revised its dredge and fill regulations on 25 July 1975 to include nontidal wetlands and a variety of "navigable waters." Implementation of this expanded authority has been phased over a 2-year period. In Phase I, which began on 25 July 1975, only coastal wetlands contiguous or adjacent to coastal waters and freshwater wetlands contiguous or adjacent to inland navigable waters of the United States were regulated by the Corps. In Phase II, freshwater wetlands contiguous or adjacent to primary tributaries were added to the Corps' jurisdiction on 1 September 1976. In Phase III, planned for implementation on 1 July 1977 and based upon water quality guidelines, any navigable water in which activity will have a significant impact upon the environment will be regulated.

The Corps of Engineers evaluates each permit application to determine the benefits which reasonably may be expected from the proposal. Such benefits are then balanced against reasonably foreseeable detriments. In applying this process, all factors which may be relevant to the proposal are considered. Among the factors considered in evaluating permit application are conservation, economics, aesthetics, historic values, general environmental concerns, navigation, land-use classifications, fish and wildlife, recreation, flood damage prevention, water supply, water quality, and, in general, the needs and welfare of the people. Permits are issued when it is determined to be in the overall public interest.

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SPECIAL AND CONTINUING AUTHORITIES

Small Flood Control Projects
(Section 205, Flood Control Act of 1948, as Amended)

Small flood control projects not specifically

authorized by Congress may be constructed under authority given the Chief of Engineers. The Federal share in such projects may not exceed $2,000,000, except where the project protects an area that has been declared a major disaster area in the 5-year period immediately preceding the date the Chief of Engineers deems such work advisable. Then the Federal share may not exceed $3,000,000. The work must be a complete solution to the flood problem involved so as not to commit the United States to additional improvements to ensure effective operation.

Small Water Resource Development Projects
(Section 201, Flood Control Act of 1965)

This special authority expedites the authorization of small projects by allowing them to be acted on by a resolution of the Committees on Public Works of the Senate and House of Representatives rather than the Congress as a whole. For such projects, the Corps is authorized to construct, operate, and maintain both single and multipurpose projects involving, but not limited to, navigation, flood control, and shore protection. The estimated Federal first cost of these projects must be less than $15,000,000.

Small Navigation Projects
(Section 107, 1960 River and Harbor Act, as Amended)

This legislation authorizes the Corps of Engineers to construct small river and harbor improvement projects not specifically authorized by Congress. The Federal share in such projects may not exceed $2,000,000. These projects must be complete in themselves and not commit the United States to any additional improvement to ensure successful operation. Such projects are also subject to the same requirements of feasibility and economic justification as the larger projects which require specific authorization by Congress.

Small Beach Erosion Control Projects
(Section 103, River and Harbor Act of 1962, as Amended)

Small beach restoration and protection projects not specifically authorized by Congress are constructed under this authority. The Federal share of the cost must not exceed $1,000,000 for a single project, and the project must not be dependent on additional improvements for success.

Snagging and Clearing
(Section 2, Flood Control Act of 1937, as Amended by Section 208, 1954 Flood Control Act)

The Corps of Engineers is authorized, under this act, to spend up to $250,000 on any single tributary during any one fiscal year in the interest of flood control. This work includes removing of accumulated snags and other debris, and clearing and straightening of stream channels.

Emergency Bank Protection
(Section 14, Flood Control Act of 1946, as Amended)

This act authorized the expenditure at the single locality, of up to $250,000 per year for repair, restoration, and modification of emergency streambank and shoreline protection to prevent damages to highways, bridge approaches, and other public works.

Flood Fighting, Repair, and Rescue Work
(Public Law 99, 84th Congress)

This law authorizes the Corps of Engineers to engage in flood fighting and rescue operations, and to repair or restore any flood control work threatened or destroyed by flood.

Snagging and Clearing
(Section 3 of Public Law 14, River and Harbor Act of 1945)

This Act authorizes emergency work by the

Corps of Engineers to clear or remove unreasonable obstructions from rivers, harbors, and other waterways in the interest of navigation and flood control. However, this authority has been used almost exclusively for navigation improvements.

Natural Disaster Assistance
(Public Law 288, 93rd Congress)

Under this law, the Corps of Engineers is authorized to cooperate with the Federal Disaster Assistance Administration in providing assistance to State and local governments in dealing with natural disasters. Assistance includes performing emergency work essential for the preservation and protection of life and property, conducting damage survey investigations, repairing, restoring or replacing public road facilities, and providing technical and engineering services. This law supersedes and incorporates provisions of Public Law 606, 91st Congress, as amended.

Project Deauthorization
(Section 12 of Public Law 93-251, Water Resources Development Act of 1974)

This act establishes a procedure for deauthorization of projects which have been authorized for at least 8 years, have not received any Congressional appropriations within the last 8 years, and should be no longer authorized. The Secretary of the Army acting through the Chief of Engineers is required to annually provide Congress a list of eligible projects. Prior to the submission of the list to Congress, the Chief of Engineers shall obtain the views of interested Federal departments, agencies, and instrumentalities, the governors of affected States, and concerned members of Congress.

Comprehensive Planning Cooperation
(Section 22 of Public Law 93-251, Water Resources Development Act of 1974)

This act authorizes the Secretary of the Army, acting through the Chief of Engineers, to cooperate with any State in the preparation of comprehensive plans for the development, utilization, and conservation of the water and related resources of drainage basins located within the boundaries of that State, and to submit to Congress reports and recommendations with respect to appropriate Federal participation in carrying out such plans. The Federal share in such plans is limited to $200,000 annually in any one State.

Shoreline Erosion Control Demonstration Act of 1974
(Section 54 of Public Law 93-251, Water Resources Development Act of 1974)

This act provides for the establishment of a national shoreline erosion control development and demonstration program at specified areas, and the establishment of a shoreline erosion advisory panel. The program is to be conducted for a period of 5 fiscal years with total appropriations not to exceed $8,000,000. The program shall consist of planning, constructing, operating, evaluating, and demonstrating prototype shoreline erosion control devices, both engineered and vegetative. The demonstration projects shall emphasize the development of low-cost means to prevent and control shoreline erosion.

Technical and Engineering Assistance
(Section 55 of Public Law 93-251, Water Resources Development Act of 1974)

This act authorizes the Corps of Engineers to provide technical and engineering assistance to non-Federal public interests in developing structural and nonstructural methods of preventing damages attributable to shore and streambank erosion.

FLOOD PLAIN MANAGEMENT SERVICES

The Secretary of the Army has been authorized by Section 206 of the Flood Control Act of 1960, Public Law 86-645, through the Chief of Engineers, to compile and disseminate certain information on floods and flood damages. This information is to include descriptions of areas subject to inundation by floods of various magnitudes and frequencies, general criteria for guidance in the use of flood plains,

and to provide engineering advice to local interests for use in planning to reduce flood damages.

Flood plain information studies are a readily available source of information for Federal agencies, States, local governments, and citizens to use in planning and regulating the development of flood plains. Objectives of the studies include reduction of flood damages and hazards, preservation of adequate floodway channels, and protection of existing developments. Information to accomplish these objectives is also developed for all Corps of Engineers reports concerned with flood-damage reduction.

Flood plain studies are made for specific localities only upon the request of a State or responsible local governmental agency and after approval by the Division Engineer. A typical report includes maps or mosaics, profiles, charts, tables, and a narrative describing the extent, depth, probability, and duration of flooding by floods of the past and those that may be expected in the future.

Application by a local agency in Louisiana for a flood plain information study is made to the appropriate District Engineer of the U. S. Army Corps of Engineers through the Department of Transportation and Development, Office of Public Works of the State of Louisiana in Baton Rouge. The Department of Transportation and Development, Office of Public Works, coordinates applications from agencies in Louisiana. Both the District office of the Corps of Engineers and the Department of Transportation and Development, Office of Public Works, assist in preparation of applications for flood plain studies. Boundaries for Corps of Engineers Districts and addresses for various Corps of Engineers offices are shown on pages ii and iii.

FLOOD INSURANCE STUDIES

Prior to the authorization of a National Flood Insurance Program, the Department of Housing and Urban Development (HUD) concluded an agreement with the Corps of Engineers whereby the latter agency was authorized to conduct pilot studies in seven areas chosen nationwide. The purpose of the studies was to determine the feasibility of establishing a government-sponsored flood insurance program.

Under the National Flood Insurance Act of 1968 (Public Law 90-448) as amended by the Flood Disaster Protection Act of 1973 (Public Law 93-234), the Secretary of HUD was authorized to establish and carry out a National Flood Insurance Program. Title XIII of the National Flood Disaster Act provides that the Secretary may make studies and investigations to establish the risk premium rates for flood insurance in communities and, in carrying out his responsibility, is authorized to use the services, on a reimbursable basis, of the Department of the Army, the Department of the Interior, the Department of Agriculture, the Department of Commerce and the Tennessee Valley Authority to the Maximum extent feasible.

COASTAL ZONE MANAGEMENT

Changing national priorities, evolving from increased State and local interest for management of the coastal zone, resulted in the Coastal Zone Management Act (CZM) of 1972 (Public Law 92-583). This Act declared a national interest in the effective management, beneficial use, protection, and development of the coastal zone. It indicated that the primary responsibility for planning and regulation of land and water uses rests with the State and local governments.

Although the Corps was not given a specific legislative assignment in the development of the State CZM plans, Section 307 c (1) of the Act requires that "...each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum practicable extent, consistent with approved state management programs..." as such, the present Corps policy is as follows:

- Civil Works activities undertaken subsequent to approval of a State's CZM plan will be consistent with that plan to the maximum extent practicable.
- Permit applications for activities regulated by Corps authorities must include a certification that the action contemplated is consistent with the approved State CZM plan.
- Technical assistance requested by the States to assist their implementation of the national policy for coastal zone management will be provided to the extent practicable.

MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER BASIN

Mississippi River and Tributaries Alluvial Valley

The Mississippi River has made important contributions to the physical and economic growth of the Nation. When confined within banks this great river is a valuable asset. Uncontrolled, it would be a tremendous liability. The Mississippi River and its tributaries drain an area of 1-1/4 million square miles in 31 States and two Canadian provinces. This area represents about 41 percent of the total land area of the United States, exclusive of Alaska and Hawaii.

The only outlet for the vast amount of water collected from the third largest drainage basin in the world is through the Lower Mississippi River formed by the junction of the Ohio and Upper Mississippi Rivers at Cairo, Illinois. The problem, then, is to make best use of and protect against the water that drains through the Mississippi River Basin.

Prior to authorization of the existing project, the largest flood of record on the Mississippi River occurred in 1927. Major floods occurring since then include those of 1929, 1932, 1935, 1937, 1945, 1950, and 1973.

Without man-made protection works about 35,000 square miles in the alluvial valley would be flooded by the occurrence of the project flood, a projected flood which is somewhat larger than the largest flood of record and is used as a model in designing protective works.

Except for backwater areas and floodways, the alluvial valley is a highly developed agricultural and industrial region. The agricultural development is widely dispersed. The major industrial developments are measured in billions of dollars, and are concentrated near the urban centers particularly along the river below Baton Rouge, Louisiana.

After the disastrous flood of 1927, Congress authorized a comprehensive plan for flood control in the Mississippi River Alluvial Valley by passage of the Flood Control Act of May 1928. This act has been modified many times, the latest modification being by the Water Resources Development Act of 1976.

The Mississippi River and Tributaries (MR&T) project provides for flood protection of the alluvial valley of the Mississippi River between the Head of Passes, Louisiana, and Cape Girardeau, Missouri. Because of the wide expanse covered by the project and the many problems involved, no single improvement could afford protection against all floods.

The existing project contains a combination of features consisting of levees along the main stem of the river and its tributaries in the alluvial plain to confine the flood flow; reservoirs on the tributary streams to hold back peak flows; floodways to receive excess flow from the river; and channel improvement such as revetment, dikes, and dredging to increase channel capacity. There are other features consisting of control structures, cutoffs, pumping plants, floodwalls, and floodgates.

Since 1927, floods from the Mississippi River within the State of Louisiana have been confined within levees without overtopping. However, high stages in the unprotected backwater areas continue to cause considerable damage.

In addition to the flood control features, this project also provides for construction and maintenance of a navigable channel from Baton Rouge to Cairo. The Lower Mississippi, the main stem

CONTROL OF MISSISSIPPI WATERS PROTECTS LIVES AND PROPERTY

of a dependable navigation system of about 10,000 miles of natural and man-made waterways with navigable depths of 6 feet or more, is of vital importance to our Nation's transportation system and is playing an increasingly important role in national defense.

The Mississippi River Commission, under the direction of the Secretary of the Army and supervision of the Chief of Engineers, is responsible for accomplishment of work on this project. The Commission was created by an Act of Congress in 1879. The total authorized cost of the project, including all modifications, is $5.7 billion, of which $2.3 billion has been spent to date. Recent cost of annual maintenance is $50 million. Accumulated benefits of the existing project from its inauguration in 1928 to date amount to more than $51.7 billion.

The MR&T project is extensive in scope and involves a number of tributary basins. The features of the MR&T project located within the Louisiana portion of the Mississippi River Basin are discussed within this section.

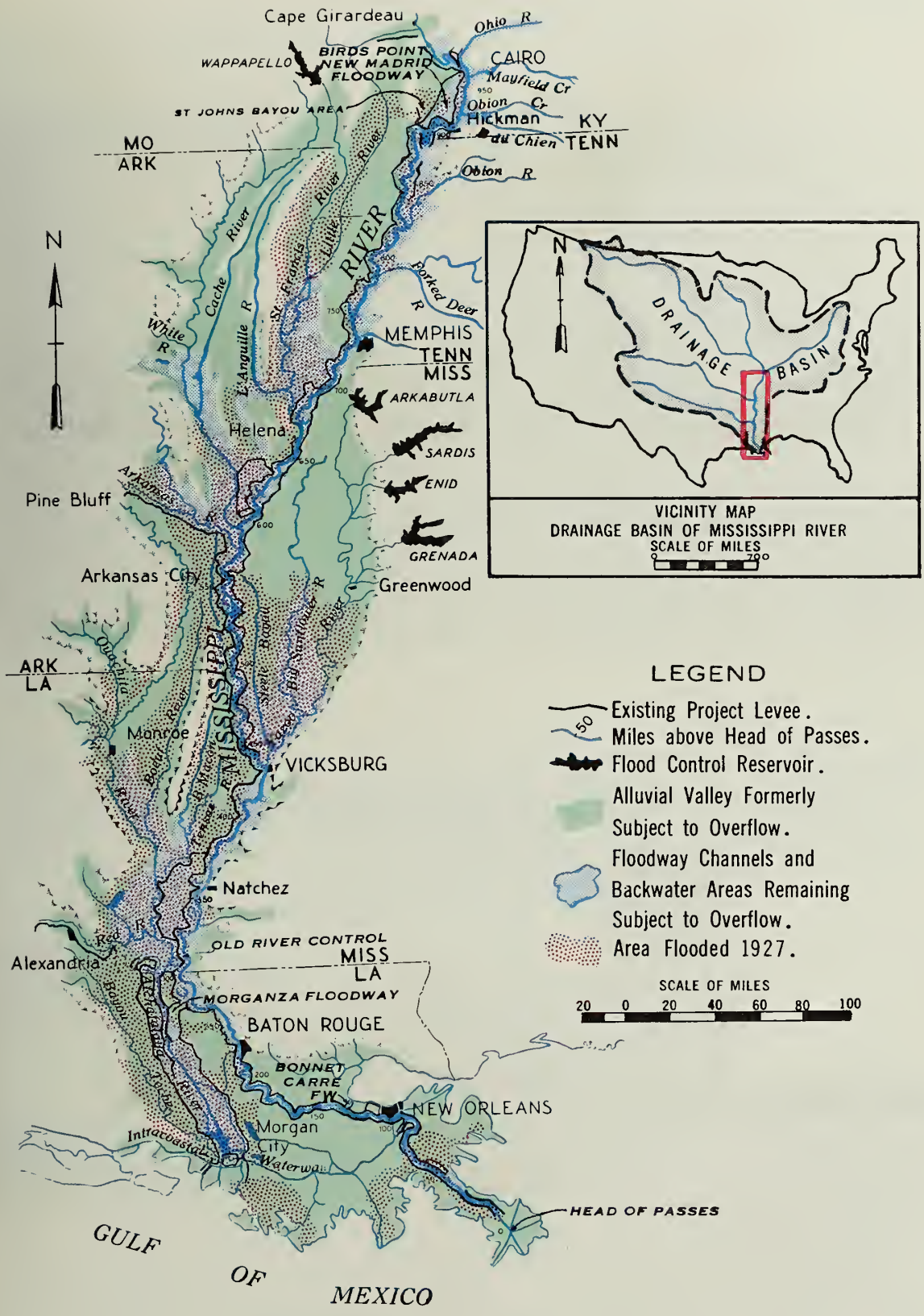
LEVEES–MAIN LINE
(Mississippi River Commission)

The levees within the Lower Mississippi River Valley are considered as one project. Obviously levees that protect any one area also influence the degree of protection afforded downstream areas.

The main stem levee system consists of 2,203 miles, of which 1,545 have been completed to grade and section.

There are 1,608 miles of levees and floodwalls now authorized along the Mississippi River below Cape Girardeau, Missouri.

Additional levees and structures included in the main stem levee system are those along the south bank of Arkansas River (85.4 miles); along the south bank of Red River (59.8 miles); and 449.2 miles in



ALLUVIAL VALLEY OF THE MISSISSIPPI RIVER

NATCHEZ

DELTA QUEEN

the Atchafalaya River Basin. Graveled or hard-surfaced roads have been constructed on 1,702 miles of the levee system.

Below Baton Rouge, in the New Orleans District (NOD), about 134 miles of levee are protected against river wave wash by levee-slope pavement. Foreshore protection works extend along 93 miles of levee. Additional work is in progress consisting of enlargement of levee section, construction of riverside and landside berms, construction of wave-wash protection, provision of seepage control measures, and construction of concrete floodwalls in highly urbanized areas.

On the west bank the levee line begins just south of Cape Girardeau, and except for gaps where tributaries join the Mississippi, extends unbroken to Venice, Louisiana, near the Gulf of Mexico. The longest continuous levee line in the MR&T project, and probably in the world, begins at high ground near Pine Bluff, Arkansas, follows the south bank of the Arkansas River to its mouth, and continues down the Mississippi River to its terminus in the vicinity of Venice, a distance of more than 650 miles. There exist Corps of Engineers navigation locks through this levee line at Old River, Port Allen, Harvey, Algiers, and a State-owned lock at Empire, Louisiana. There are additional openings at the Old River Low-Sill and Overbank Structures, and the Morganza Control Structure.

The west bank levees were considered adequate prior to the flood of 1973. During the 1973 flood it became evident that portions of the levee were inadequate based on a new project flow line developed from data generated by the flood. It was determined that 172 miles of main-line levee, between the Arkansas-Louisiana State line and a point near Black Hawk, Louisiana, needed to be raised to the revised standards. Work was initiated in fiscal year 1974 to bring the levees up to the revised standards. Costs for the 172 miles of levee-raising work in Louisiana are estimated at $162.9 million.

The east bank is, except for backwater areas, protected by levees alternating with high bluffs. Continuations of the main-line levees extend up the north bank of the Ohio River to high ground near Mound City, Illinois; the north bank of White River to Old Town Lake, Arkansas; and the south bank of Arkansas River to Pine Bluff.

Levees authorized under provisions of Section 6, 1928 Act, include 129.4 miles of levee along the banks of the Mississippi River between Cape Girardeau and Rock Island, Illinois, and 306.2 miles along tributaries within the limits of the Mississippi River backwater. These include 20.7 miles along the Red River; and 68.5 miles on the east bank of the Ouachita River. Also see separate levee projects for Bawcomville (page 50), Harrisonburg to Little River (page 57), and Moncla to Lake Long (page 39).

The main-line Mississippi River levee system in the State of Louisiana is 710 miles in length.

CHANNEL IMPROVEMENT
(Mississippi River Commission)

Channel improvement in the interest of both navigation and protection of flood control works in the lower alluvial valley below Cairo is an integral part of the Mississippi River project. The project, authorized by the Flood Control Act of May 1928 and subsequent amendments, provides for stabilization of the channel by means of revetment, dikes, and dredging.

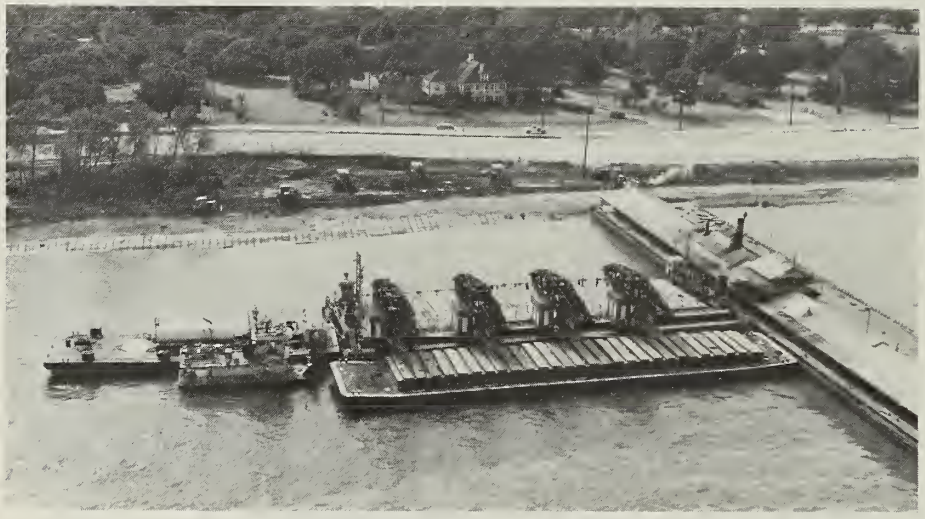
REVETMENT AND FORESHORE PROTECTION

Bank stabilization is important to both flood control and navigation, and to protect existing industrial facilities located along the river below Cairo, Illinois. On the Mississippi River it is flexible in scope and application.

The best means of protecting banks from erosion and caving is revetment, composed of articulated concrete mattress underwater and riprap above the waterline. Operative revetment in place between Cairo and Baton Rouge as of 30 June 1976 extends over 600 miles of bank of which 44 miles are in Louisiana. Below Baton Rouge, an additional 110 miles of operative revetment works are in place. The construction of 100 miles of foreshore protection is also authorized under this project. Nine

PROTECTION AGAINST EROSION.

REVETMENTS BEING MADE BY LINKING TOGETHER CONCRETE MATS



REVETMENTS PROVIDE BANK PROTECTION IN CRITICAL AREAS

miles of this work has been completed in Louisiana.

DIKES AND DREDGING

In the 725-mile reach of the Mississippi River between Cairo and Baton Rouge, a low-water navigation channel 9 feet deep and 300 feet wide is maintained by dredging and training works.

This work includes channel contraction by dikes, realignment by dredging, and closure of secondary channels, as required. On 30 June 1976, there were 162 miles of operative dikes on the Mississippi River.

In carrying out an authorized channel improvement program between Cairo and Baton Rouge, 16 cutoffs were developed between 1933 and 1942. These, combined with chute channel development and alignment improvements, decreased channel length between these cities by about 170 miles. However, current velocities increased the attack on the banks and the river began to regain its length. As a result, the net shortening between 1933 and 1962 was 114 miles of the theoretical 170-mile cutoff.

OFF-MAIN-STEM FLOOD CONTROL (Mississippi River Commission)

Supplementary improvements for local

protection have been built in those portions of the lower alluvial valley located in the basins of St. Francis and Little Rivers in Missouri and Arkansas; at Cairo, Illinois, and vicinity; along east bank tributaries in western Kentucky and Tennessee; in the lower White and Arkansas River Basins in Arkansas; in the Tensas River Basin in Arkansas and Louisiana; in the Atchafalaya Basin in Louisiana; and in the Yazoo Basin in Mississippi.

FLOODWAYS AND OUTLETS
(Mississippi River Commission)

Three major supplementary flood outlets are designed to pass one-half the project flood flows from the Mississippi River channel to the Gulf of Mexico. The Bonnet Carré Spillway and Floodway (below), located on the east bank about 33 river miles above Canal Street in New Orleans, is capable of passing a flow of 250,000 cubic feet per second into Lake Pontchartrain and thence to the Gulf. The Morganza Spillway and Floodway (page 12), located on the west bank about 50 river miles above Baton Rouge, is capable of passing a flow of 600,000 cubic feet per second into the Atchafalaya Floodway and thence to the Gulf. The West Atchafalaya Basin Floodway (page 13), located between the West Atchafalaya River levee and the West Atchafalaya Basin protection levee, is capable of passing a flow of 250,000 cubic feet per second into the Atchafalaya Floodway and thence to the Gulf (see Project Design Flood diagram on page 11).

BONNET CARRÉ SPILLWAY AND FLOODWAY
(New Orleans District)

Residents in the area consider Bonnet Carré Spillway in St. Charles Parish a pleasant place to picnic, camp, and crawfish. But the purpose for which it was built is of far greater importance. The spillway is an integral part of the comprehensive plan for flood control in the Mississippi Valley. It serves to ensure the safety of New Orleans and the downstream delta area during major floods on the Lower Mississippi.

The project, which was completed in 1936 at a cost of $14,212,200, is designed to introduce floodwaters from the Mississippi to Lake Pontchartrain to prevent overtopping of levees at and below New Orleans.

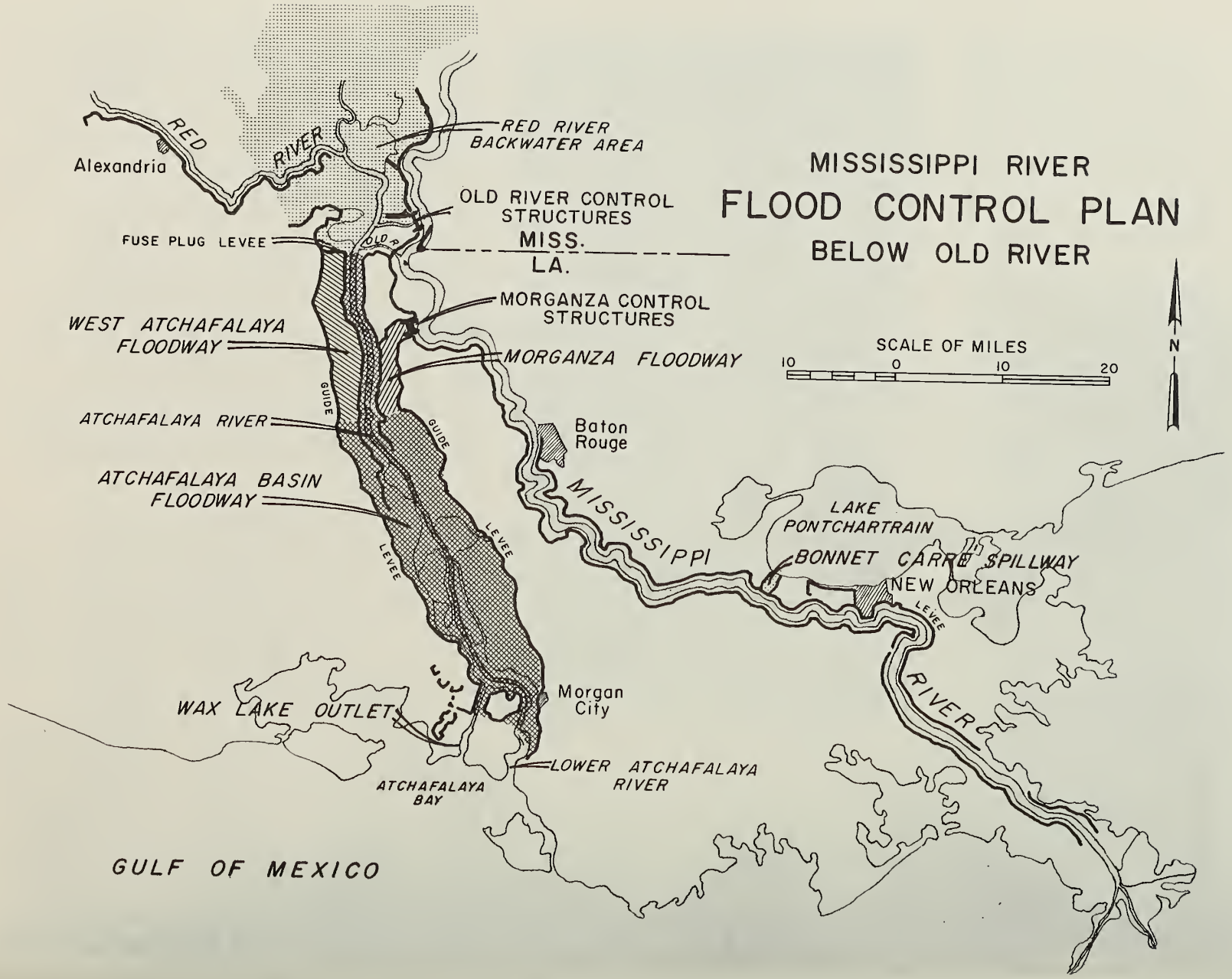
Situated between the Mississippi River and Lake Pontchartrain some 33 river miles above New Orleans, the project consists of a reinforced concrete control structure located in the riverbank, and guide levees extending about 5.7 miles from the river to the lake. These levees, averaging about 19 feet in height, form a floodway flaring from 7,700 feet in width at the river end to about 12,400 feet some 3.5 miles from the river, beyond which point the width is constant to the lake.

The overflow weir is of reinforced concrete construction. The structure consists of 350 individual bays for controlling the flow. Each bay is 20 feet wide and is equipped with movable timber needles, 8 by 11-1/2 inches in cross section. In 174 bays, the weir crest is at elevation 16 feet above mean sea level; in the remaining bays, it is 2 feet higher. The timber needles are set in place and removed by two operating cranes which ride on a service bridge crossing the control structure.

The spillway and floodway have a design capacity of 250,000 cubic feet per second and are operated to prohibit the river stage on the Carrollton gage (located near river mile 104) from exceeding 20 feet, a stage about 5 feet below levee grade.

The spillway is crossed by the Yazoo and Mississippi Valley Railroad, the Kansas City Southern Railway, and the Illinois Central Railroad, all roadbeds of which are on timber trestles. U. S. Highway 61 (Airline Highway) and Interstate Highway 10 cross the spillway on reinforced concrete bridges.

Revenue is realized through the lease of approximately 3,700 acres of project lands and mineral rights. Material deposited during operation of the spillway provides a convenient source of high-grade fill material which has been used extensively in highway and heavy construction projects in the surrounding area. This use has operated to preserve the flow capacity of the spillway.


MISSISSIPPI RIVER
FLOOD CONTROL PLAN
BELOW OLD RIVER
RED RIVER
Alexandria
RED RIVER BACKWATER AREA
OLD RIVER CONTROL STRUCTURES
FUSE PLUG LEVEE
OLD R.
MISS.
LA.
MORGANZA CONTROL STRUCTURES
WEST ATCHAFALAYA FLOODWAY
MORGANZA FLOODWAY
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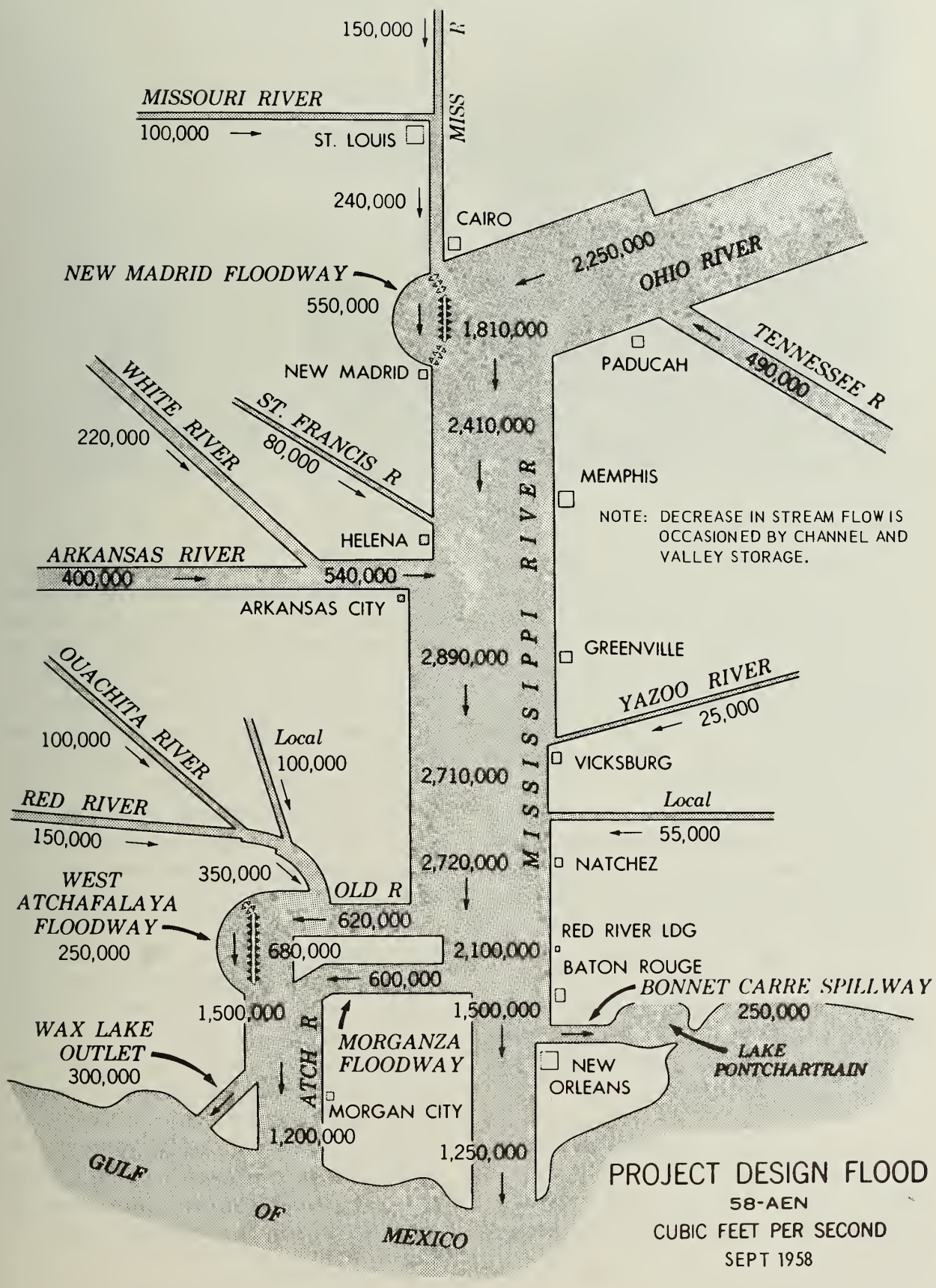
GUIDE
ATCHAFALAYA RIVER
Baton Rouge
ATCHAFALAYA BASIN FLOODWAY
LEVEE
MISSISSIPPI
LAKE PONTCHARTRAIN
BONNET CARRE SPILLWAY
NEW ORLEANS
RIVER
WAX LAKE OUTLET
Morgan City
LOWER ATCHAFALAYA RIVER
ATCHAFALAYA BAY
GULF OF MEXICO


150,000
MISSOURI RIVER
100,000
ST. LOUIS
MISS R
240,000
CAIRO
NEW MADRID FLOODWAY
550,000
2,250,000
OHIO RIVER
1,810,000
PADUCAH
TENNESSEE R
490,000
NEW MADRID
WHITE RIVER
220,000
ST. FRANCIS R
80,000
2,410,000
MEMPHIS
NOTE: DECREASE IN STREAM FLOW IS OCCASIONED BY CHANNEL AND VALLEY STORAGE.
HELENA
ARKANSAS RIVER
400,000
540,000
ARKANSAS CITY
2,890,000
GREENVILLE
YAZOO RIVER
25,000
OUACHITA RIVER
100,000
Local
100,000
2,710,000
VICKSBURG
Local
55,000
RED RIVER
150,000
2,720,000
NATCHEZ
MISSISSIPPI RIVER
WEST ATCHAFALAYA FLOODWAY
250,000
350,000
OLD R
620,000
680,000
2,100,000
RED RIVER LDG
BATON ROUGE
600,000
BONNET CARRE SPILLWAY
250,000
1,500,000
1,500,000
WAX LAKE OUTLET
300,000
ATCH R
MORGANZA FLOODWAY
MORGAN CITY
NEW ORLEANS
LAKE PONTCHARTRAIN
1,200,000
1,250,000
GULF OF MEXICO
PROJECT DESIGN FLOOD
58-AEN
CUBIC FEET PER SECOND
SEPT 1958

FISHING AT BONNET CARRÉ SPILLWAY

Approximately 250,000 visitors annually enjoy the outdoor recreation opportunities offered by the spillway. However, attendance between 1973-1975 was lower than usual due to the high water on the Mississippi River. Expanded use of the spillway's recreation capabilities is being planned at Federal and local levels. A master plan for development of the recreational potential of the spillway area has been prepared and is being reviewed.

Two licenses have been granted for recreational development of each guide levee, one to the St. Charles Parish Police Jury and the other to the Pontchartrain Levee District. A two-lane concrete launch ramp and improvements to camping and picnicking facilities have been completed. Plans for additional facilities are proposed.

The spillway was completed in 1936 and has served its intended function on five occasions--in 1937, 1945, 1950, 1973, and 1975. It stands ready to do so again whenever the need arises.

MORGANZA FLOODWAY
(New Orleans District)

Located on the west side of the Mississippi River some 35 miles northwest of Baton Rouge, the Morganza Floodway is capable of introducing excess floodwaters from the Mississippi River to the Atchafalaya Basin Floodway at a rate of 600,000 cubic feet per second (4.5 million gallons per second). The structure was operated for the first and only time when a partial opening was made during the 1973 flood to lower Mississippi River stages and relieve pressure on the Old River Low-Sill Control Structure.

The floodway consists of a combined gated-control structure and high-level highway and railroad crossing on the west bank of the Mississippi River just above the town of Morganza; guide levees to confine the floodwaters within the Atchafalaya Basin Floodway about 20 miles to the south; high-level highway and railroad crossings over the floodway; and drainage alterations and improvements.

Comprehensive easements for full use of the lands within the floodway have been acquired between the guide levees. Habitation within the floodway is not permitted, but use of the land for farming, removal of timber and minerals, and other purposes not in conflict with flood control is permitted with prior approval.

Large areas have been leased to private clubs or individuals for hunting and fishing. The land and water areas around the control structure are extensively used for fishing and picnicking.

Descriptions of the various features comprising the floodway follow.

Morganza Combined Control Structure. The structure consists of about 19,340 linear feet of levee, and a reinforced-concrete structure having 125 gated openings, each 28 feet 3 inches wide, separated by 3-foot-wide piers. Each opening is equipped with a steel vertical-lift gate operated by a gantry crane. Bridges for the gantry crane, Louisiana Highway 1 (old No. 30), and the joint track for the Kansas City Southern and Texas and Pacific Railways are supported by piers between the earth embankments flanking the control structure. The structure was completed in 1954 at a cost of $20,680,000.

Morganza Floodway Levees. The levees consist of the upper and lower guide levees which, with the East Atchafalaya River levee, form a floodway averaging about 5 miles in width. The upper guide levee extends about 12 miles southwesterly from the combined control structure to the East Atchafalaya River levee about 2 miles upstream from Melville. This levee will protect more than 100 square miles of productive farmlands in Upper Pointe Coupee Parish from overflow during floodway operations. The lower guide levee extends about 19.4 miles in a southerly direction from the control structure to join the East Atchafalaya Basin protection levee at the latitude of Krotz Springs.

Pointe Coupee Drainage Structure and Bayou Latenache. A drainage system for the Upper Pointe Coupee Parish area, which is protected by the upper guide levee, was provided with a drainage structure at the intersection of the levee and Bayou Latenache; and the bayou was enlarged from the drainage structure to U. S. Highway 190. The structure, located about 0.5 mile east of the Atchafalaya River, consists of a reinforced-concrete structure supported on untreated timber piles and contains two motor-operated steel lift gates each 10.5 feet wide and 15.0 feet high. This feature was completed in 1942 at a cost of $310,000. Operation and maintenance are the responsibility of the U. S. Army Corps of Engineers.

Inundation rights have been acquired on 12,800 acres of land above the drainage structure for storage of runoff during the closure of the gates for operation of the Morganza Floodway.

Additional drainage work has been authorized for the Upper Pointe Coupee area. Initially, improvements included the enlargement of Bayou Latenache, a Corps of Engineers responsibility, and construction of an interior drainage system of major laterals and on-farm drains by others. As a result of the 1973 flood, the project was restudied. The report recommended that a pumping plant be constructed in lieu of enlarging Bayou Latenache. The total estimated cost of the pumping station is $8,135,000.

High-Level Crossings. A 39,000-foot, single-track, high-level crossing for the Texas and Pacific Railway main line was constructed between McKneely and Red Cross. Consisting of two reinforced-concrete deck girder trestles 6,000 and 10,000 feet in length and earth embankment sections, this feature was completed in 1950 at a cost of $6,500,000.

A similar high-level crossing for the New Orleans, Texas, and Mexico Railway was completed in 1944 between Lottie and East Krotz Springs. It consists of 18,750 linear feet of trestle and 8,350 linear feet of embankment. Cost was $3,300,000. This crossing will be used by other railroads during interruptions caused by operation of the West Atchafalaya Floodway (below). In 1945 a high-level crossing for U. S. Highway 190 was completed between Lottie and East Krotz Springs at a cost of $4,670,000. This crossing consists of 8,609 feet of paved embankment and 18,778 linear feet of reinforced-concrete trestle.

The railway companies and the Louisiana State Highway Department are responsible for operation and maintenance of the railway and highway crossings, respectively.

WEST ATCHAFALAYA FLOODWAY
(New Orleans District)

Under the project plan, it is estimated that this floodway, which has a designed capacity of 250,000

cubic feet per second, will be used on an average of once in 100 years for carrying floodwaters in excess of the combined capacities of the Atchafalaya and Mississippi Rivers and the Morganza Floodway. The floodwaters will enter the floodway by overtopping the levee at the head of the floodway and along the south bank of Bayou des Glaises. The floodway has not been operated to date.

The floodway, about 6 miles in width, is located between the West Atchafalaya River levee and the West Atchafalaya Basin protection levee, and extends from Bayou des Glaises to the latitude of Krotz Springs, a distance of about 32 miles. Below this point, it joins the floodwaters from the Atchafalaya River and the Morganza Floodway in the Atchafalaya Basin Floodway.

Perpetual flowage easements were acquired by the Government over all lands and improvements in the floodway down to the latitude of Krotz Springs. These easements provide for full use of the lands for flood control purposes. Owners retain the rights to farm, improve, and inhabit the lands, and to harvest timber and minerals.

Railway and highway traffic is carried over the floodway on high-level crossings described below:

New Orleans, Texas, and Mexico Railway. The high-level crossing between Krotz Springs and Courtableau provides means by which uninterrupted traffic can be maintained by the New Orleans, Texas, and Mexico Railroad; the Texas and Pacific Railway; the Missouri Pacific Railroad; and the Kansas City Southern Railway across the floodway during the floods requiring operation of the West Atchafalaya Floodway. The detoured traffic will regain its own route by use of the Opelousas-Ville Platte-Bunkie Railway connection, described below. The single-track, high-level crossing comprises 31,466 linear feet of earth embankment and 7,500 linear feet of reinforced-concrete-ballaster deck-type trestle supported on piling. It was completed in September 1961 at a cost of $6,547,000. The railroad companies are responsible for maintenance.

Opelousas-Ville Platte-Bunkie Railway Connection. Located west of the West Atchafalaya Floodway between Opelousas and Bunkie, this connection was constructed in lieu of providing two additional high-level crossings over the West Atchafalaya Floodway for the Texas and Pacific and the Kansas City Southern Railways. The connection included construction of 16 miles of new single-track railroad between Opelousas and Ville Platte and the rehabilitation and strengthening of about 20 miles of single-track railroad between Ville Platte and Bunkie. Construction was completed in 1950 at a cost of $820,000. Maintenance is the responsibility of the railroad companies.

U. S. Highway 190. The high-level crossing between Krotz Springs and Courtableau consists of an elevated 4-lane, twin-bridge highway, averaging about 29 feet above natural ground, comprising 29,385 linear feet of earth embankment and 7,500 linear feet of reinforced-concrete bridge supported by piling. During the operation of the floodway this crossing will provide an east-west highway route across the Atchafalaya Basin. Other usable routes include Interstate 10, about 15 miles to the south; U. S. Highway 90 through Morgan City, 60 miles to the south; and U. S. Highway 84 through Natchez, Mississippi, 74 miles to the north. Construction was started in 1956, and the crossing was opened to traffic in 1965. Cost was $8,385,900. The Louisiana Highway Department is responsible for maintenance.

ATCHAFALAYA BASIN FLOODWAY
(New Orleans District)

The floodway is located between protection levees approximately 15 miles apart extending from the lower limits of the Morganza and West Atchafalaya Floodways at the latitude of Krotz Springs to Morgan City and through the Lower Atchafalaya River and Wax Lake Outlet to the Gulf of Mexico. The improvements necessary to this floodway are described as separate features. (See map in back of this pamphlet and Atchafalaya River Basin section, page 29.)

OLD RIVER
(New Orleans District)

Studies showed that between 1965 and 1975 the Mississippi River could have changed its course to

that of the Old and Atchafalaya Rivers. If this had occurred, the cities of Baton Rouge and New Orleans and many lesser size communities would have been without sufficient quantities of fresh water to satisfy domestic needs during low-water periods. The vast industrial complex located from Baton Rouge to near the mouth of the river would have been without the fresh water vital to its operation. The Mississippi River as far upstream as Baton Rouge would have become brackish.

Cities, towns, railroads, highways, waterways, industry, agriculture, and utilities in the Atchafalaya Basin would have been subject to serious disruption. The effect would have probably been felt as far upstream as Vicksburg on the Mississippi River and Boyce on the Red River as a result of swifter currents and increased meandering. The investment of the United States in flood control and navigation works would have been threatened and a large amount of it lost. The plan for confining floods below Old River would have had to be redesigned and reconstructed.

The cost associated with providing the necessary flood protection against captured flows of the Mississippi River down the Old and Atchafalaya Rivers has been estimated to be close to $2 billion (July 1976 price level).

In order to preserve the present course of the river, a project was authorized by Public Law 780, 83d Congress, approved September 1954 (a modification of the Flood Control Act of May 1928), to maintain the balance of flows from the Mississippi River into the Atchafalaya River and Basin by control structures on the right bank of the Mississippi River. The U. S. Army Corps of Engineers is responsible for operation and maintenance of all project features except the main-line Mississippi River levee and road. Principal features include the following:

LOW-SILL CONTROL STRUCTURE

The Old River Low-Sill Control Structure is a reinforced-concrete structure consisting of 11 gate bays, each having a 44-foot clear width between piers. The three center bays have a weir crest 5.0 feet below mean sea level for passing low flows, and the other bays have a weir crest 10.0 feet above mean sea level. Total length is 566 feet between abutments. Vertical-lift steel gates are operated by two traveling gantry cranes. The low-sill control structure was completed in 1959. The inflow channel, completed in 1960, is 0.5 mile in length and has a bottom width of 1,000 feet, 5.0 feet below mean sea level. The outflow channel, also completed in 1960, is 7 miles in length and has a bottom width of 900 feet at an average of 9.0 feet below mean sea level. About 4,500 acres of land adjacent to these channels were cleared during 1963 to provide better flow conditions in the overbank area.

Emergency rehabilitation work under Public Law 99 at the Old River Low-Sill Control Structure was required because high stages during the 1973 flood caused a large scour hole to develop underneath the structure, and caused bank erosion in the inflow and outflow channels. The low-sill control structure wing wall on the left descending bank of the inflow channel collapsed due to eddy currents which undermined the wing-wall base slab. A rock dike was constructed to replace the wing wall.

Other emergency work included the filling of voids underneath the structure with a special grouting material, placing additional scour protection around the structure and installation of a new lighting system. The estimated cost of the emergency work is $15,700,000, of which $15,250,000 has been appropriated as of 30 June 1976.

To further address problems that occurred during the 1973 flood, and possible future problems, a comprehensive rehabilitation plan has been developed for the Old River Low-Sill and Overbank Structures. The rehabilitation plan was initiated under the Old River maintenance program in fiscal year 1976.

The primary features of the rehabilitation program include modification of the vertical lift gates of the low-sill control structure to allow for orifice closure, development of a surveillance program to monitor channel conditions abutting the low-sill structure, operation studies, protection of the outflow channel with revetment for both structures, development and construction of inflow hydraulic control measures for the low-sill structure, and remedial measures for the overbank structure to

OLD RIVER LOW-SILL AND OVERBANK STRUCTURE

MORGANZA CONTROL STRUCTURE

BONNET CARRÉ SPILLWAY

LOW-SILL CONTROL STRUCTURE. . .

REMOVAL OF DEBRIS PRIOR TO REHABILITATION WORK

GATE BAYS ALLOW FOR CONTROLLED FLOW

reduce scour on the downstream side of the structure.

OVERBANK CONTROL STRUCTURE

The Overbank Control Structure is a reinforced-concrete structure consisting of 73 gate bays, each having a 44-foot clear width between piers. Weir crest is 52.0 feet above mean sea level. Total length is 3,356 feet between abutments. Flow is controlled by hinged timber panels operated by two traveling gantry cranes. This structure, completed in 1959, was operated in 1973, 1974, and 1975.

OLD RIVER NAVIGATION LOCK

The lock provides for continued navigation between the Atchafalaya, Ouachita-Black, and Red Rivers, and the Mississippi River through Old River. It has a width of 75 feet, a usable length of 1,190 feet, and sills 11.0 feet below mean sea level. Construction of the lock was initiated in 1958 and completed in 1962. The approach channels were completed and the lock was placed in operation in 1963. A roadway on the levee crosses the lock on a lift bridge which was completed in 1965. Average

traffic through the lock, 1971-1975, was 4,767,956 tons.

LEVEE FROM BLACK HAWK TO TORRAS

Approximately 16 miles of levee are required to join the right bank main-line levee at Black Hawk with the control structures and lock described above and the main-line levee below Old River. This levee is complete, and its maintenance is the responsibility of the Fifth Louisiana Levee District. Closure of Old River was completed during 1963. A levee crown width of 40 feet was provided for a roadway built and maintained by the Louisiana Highway Department.

BANK STABILIZATION

In the inflow and outflow channels and along the Red and Atchafalaya Rivers between the outflow channel and the vicinity of Simmesport, bank stabilization works are being constructed as required to control the meandering of the main channels.

The current estimated construction cost of the Old River feature is $84,409,000, of which $1,409,000 is non-Federal.

MISSISSIPPI RIVER, CAIRO, ILLINOIS, TO BATON ROUGE, LOUISIANA (Mississippi River Commission)

In 1896, Congress authorized a channel 9 feet deep and 250 feet wide at low water between Cairo, Illinois, and the Head of Passes, Louisiana. In 1928, this authorization was extended under the newly enacted "Flood Control, Mississippi River and Tributaries" project to include an increased channel width of 300 feet. In 1944, the authorized channel depth from Cairo to Baton Rouge was increased to 12 feet at low water, with the authorized width remaining at 300 feet.

Presently, in this 725-mile reach, a low-water navigation channel 9 feet deep and 300 feet wide is maintained by dredging and training works. The low-water depth will be increased as the Mississippi River channel is stabilized and contracted.

Closure of secondary channels (Mississippi River Channel Improvement, page 7) will result in increased efficiency of the main channel with attendant lowering of navigation maintenance cost between Cairo and Baton Rouge. Maintenance performed during the low-water season now involves dredging through 40 to 70 crossings (shallow areas created as the river swings out of one bend and into another) out of a total of about 200.

The number of crossings dredged and/or redredged and the volume of dredging required in any one low-water season are dependent largely upon the stage and discharge cycle, slopes, width of channel, velocities, alignment, and channel stability. Dredging required to maintain the 9-foot-deep channel through these river crossings ranges from about 25 to 45 million cubic yards annually.

Aids to navigation on the Lower Mississippi River include fixed shore lights and markers, and buoys marking the navigation channel. Total traffic on the river between Cairo and Baton Rouge, but not including Baton Rouge, during 1975, was 108,926,777 tons. The 5-year average, 1971-1975, was 102,746,280 tons. The total traffic between Minneapolis, Minnesota, and the Gulf of Mexico in 1975 was 311,239,484 tons, as compared with an average annual traffic of 283,479,235 tons in this reach during the 5-year period, 1971-1975. A survey study is being conducted to determine the feasibility of extending deepwater navigation between Baton Rouge and Natchez, Mississippi (see page 25).

BATON ROUGE HARBOR– DEVIL'S SWAMP (New Orleans District)

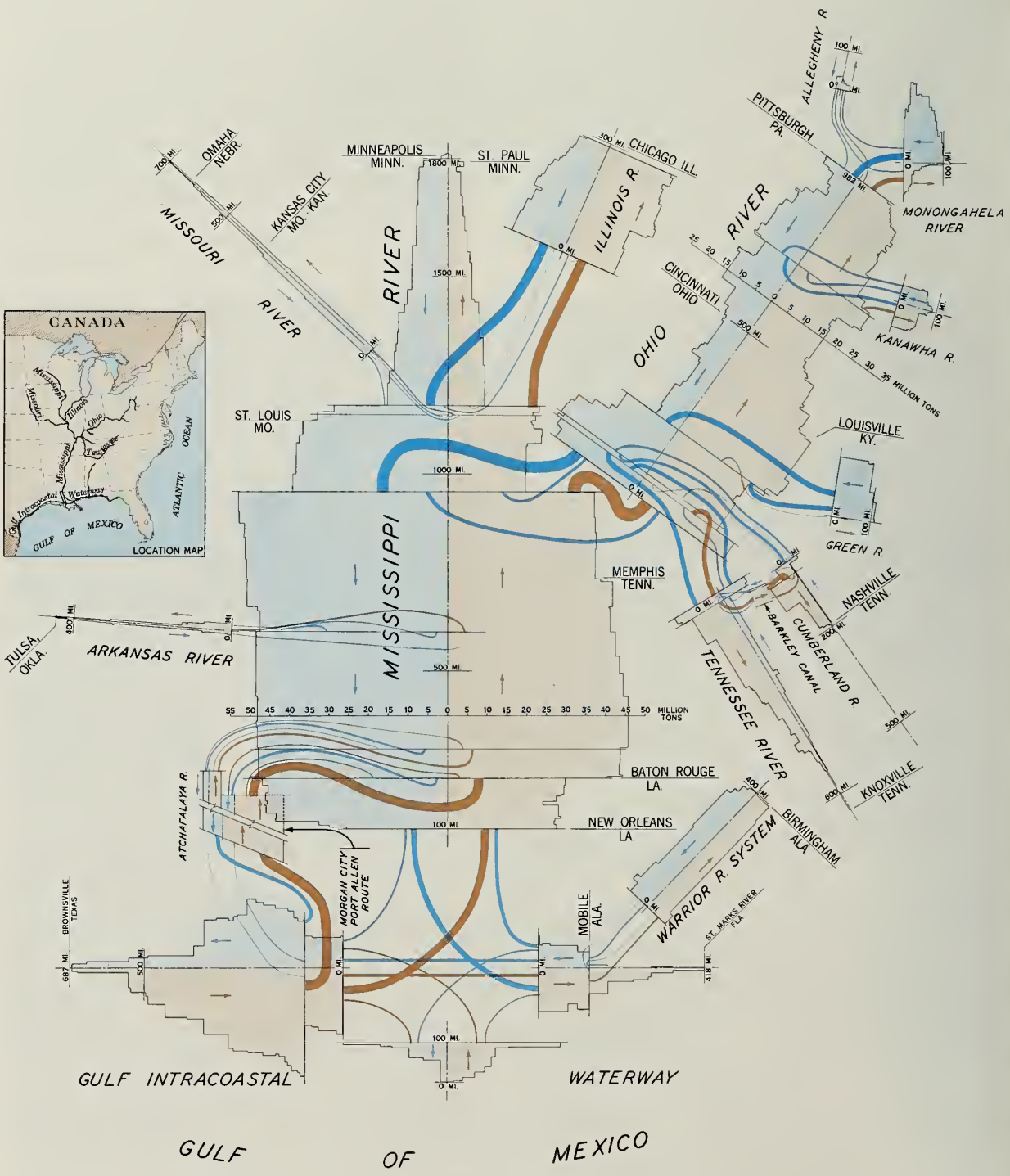
In January 1958, a 12-foot-deep, 300-foot-wide channel, which will eventually be about 5 miles long, was begun from the Mississippi River near the northern city limits of Baton Rouge. The purpose of the channel is to provide an industrial expansion area for the Port of Baton Rouge. Initially, construction of the first 2.5 miles of the channel was authorized. This project, which is located along a high escarpment on the east bank of the Mississippi River,

will be completed when the remaining 2.5 miles is justified by developments on the initial channel.

The sum of $649,000 was voluntarily contributed by the Greater Baton Rouge Port Commission toward construction of the first 2.5 miles of the channel. This offer of participation above and beyond requirements of the authorizing act was made in the interest of speeding the appropriation of Federal funds for construction and indicated a sense of urgent need for the project by local interests.

The 2.5-mile channel, authorized by the River and Harbor Act of July 1946 and the Flood Control Act of June 1948, was completed July 2, 1959, at a cost of $699,200. The River and Harbor Act of October 1962 authorized the construction of additional dikes and retaining structures to raise the excavated material bank above Mississippi River stages at a Federal cost of $299,500, provided local interests contributed the sum of $100,500 toward the cost of the work. Traffic for 1975 was 592,998 tons. The estimated cost for the entire project is $9,130,000, of which $8,260,000 is Federal and $870,000 is non-Federal.

BATON ROUGE, LOUISIANA, ALONG THE MISSISSIPPI



INLAND FREIGHT TONNAGE ON THE MISSISSIPPI RIVER SYSTEM
AND THE GULF INTRACOASTAL WATERWAY 1974

MISSISSIPPI RIVER TRAFFIC
Minneapolis, Minn, to Mouth of Passes
Net Tons
1940-1975

MILLION TONS

320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0

1940
1945
1950
1955
1960
1965
1970
1975

MISSISSIPPI DELTA REGION
(New Orleans District)

The objective of this feature is to increase wetlands productivity by the establishment of an ecological regimen favorable to the production of oysters, shrimp, fish, fur-bearing animals, and migratory waterfowl. Authorized by the Flood Control Act of 1965, the feature consists of four gated water- or salinity-control structures on the banks of the Mississippi River with connecting levees and channels that will introduce fresh water from the Mississippi River to the bays and marshes of the Mississippi Delta. Salinity-control structures will be located on the east bank of the river at Bohemia and Scarsdale (Caernarvon) and on the west bank at Myrtle Grove and Homeplace. The current estimated cost (30 October 1976) is $25,700,000, of which $19,300,000 is Federal and $6,400,000 is non-Federal. Preconstruction planning, initiated in 1968, has been delayed due to lack of local support.

ALLUVIAL VALLEY MAPPING

Topographic maps of the alluvial valley are prepared as a part of the work on the MR&T project. Quadrangle maps, scale 1:62,500, and topographic maps, scale 1:250,000, covering the alluvial valley and adjacent areas have been published and are periodically revised. These maps are available for sale to the public at the U. S. Army Engineer Districts, New Orleans, Louisiana, and Vicksburg, Mississippi.

GAGES AND OBSERVATIONS

Gages have been established and are maintained at various places on the Mississippi River, its tributaries and outlets, and offshore areas of Louisiana. Records of stream height (stage) and volume of flow (discharge) are published annually by each District of the Corps of Engineers.

Other observations are made by the Corps of Engineers to determine the quality of water in streams, lakes, and coastal areas. Measurements taken include those for salinity, temperature, dissolved oxygen, and suspended material. These data are used in studies related to construction of projects and normal operating procedures in the interest of preventing saltwater intrusion, maintaining navigation channels at proper depths, promoting a favorable ecological regimen for fish and wildlife, and other considerations.

Mississippi River

Three navigation projects not part of the MR&T project have been authorized in the Mississippi River Basin. These projects are described below:

LAKE PROVIDENCE HARBOR
(Vicksburg District)

Lake Providence Harbor consists of a dredged channel connecting with the Mississippi River on the west bank, near Mile 484 above the Head of Passes, and a turning basin at the landward end of the channel. The channel is 0.5 mile in length with a depth of 9 feet over a bottom width of 150 feet. The turning basin is 1,000 feet long, flaring from a bottom width of 150 feet at its junction with the channel to 400 feet at a point 400 feet landward of the junction. The depth in the turning basin is 9 feet.

Excavated material from the channel and turning basin was deposited adjacent to the turning basin for a raised port area. Local interests constructed the dikes required to retain all excavated material. They also constructed a fill for railroad and highway access to the area.

Constructed under Section 107 of the River and Harbor Act of 1960, as amended, the project was completed in November 1963 at a Federal cost of $198,859. Subsequent to completion of the project,

NAVIGATION DEPTHS ARE MAINTAINED BY PIPELINE DREDGING AND. . .

local interests have made additional expenditure on port facilities. Average annual traffic moving through this harbor, 1971-1975, was 297,000 tons.

MISSISSIPPI RIVER, BATON ROUGE TO GULF OF MEXICO (New Orleans District)

Maintenance of sufficient navigation depths on the Mississippi River from Baton Rouge to the Gulf is a project of major importance. The Port of New Orleans, which is about 95 miles above the Head of Passes on the Mississippi River, is the second largest port in the United States in waterborne commerce. Baton Rouge, located 135 miles upstream from New Orleans, is the sixth largest port in the Nation.

The average annual traffic on the Mississippi River between Baton Rouge and the Gulf for the years 1971-1975 was 235,545,869 tons. In 1975, corn, soybeans, crude petroleum, coal and lignite, and gasoline accounted for about 52 percent of the 263,879,954 tons of cargo that traveled this waterway. Other major cargoes of the more than 150 categories listed for this waterway include aluminum ore, distillate fuel oil, basic chemicals, salt, sulphur, and phosphate rock.

Several separate projects for the Mississippi River, Baton Rouge to New Orleans, South Pass, and Southwest Pass were combined by the River and

. . .SIDECASTER DREDGING.

Harbor Acts of 1945 and 1962. Authorized dimensions are: between Baton Rouge and New Orleans, 40 feet deep by 500 feet wide; 40 feet deep for a width of 500 feet within the 35-foot-deep by 1,500-foot-wide channel in the Port limits of New Orleans; New Orleans to Head of Passes, 40 feet deep by 1,000 feet wide; Southwest Pass, 40 feet deep by 800 feet wide; Southwest Pass bar channel, 40 feet deep by 600 feet wide; South Pass, 30 feet deep by 450 feet wide; and South Pass bar channel, 30 feet deep by 600 feet wide.

The project is complete except for the construction of lateral pile dikes and bank nourishment items in Southwest Pass. Construction of these dikes is tentatively scheduled to begin in 1978 pending the receipt of construction funds. Estimated construction cost is about $83 million plus $29,800 for U. S. Coast Guard for aids to navigation. The cost of the project to 30 June 1976 is $33,262,200.

The project was modified in 1956 to include construction of a seaway canal 36 feet deep over a bottom width of 500 feet from the Inner Harbor Navigation Canal in New Orleans to the Gulf of Mexico. This feature is fully described on page 105 under "Mississippi River-Gulf Outlet."

MISSISSIPPI RIVER OUTLETS, VENICE
(New Orleans District)

These outlets will be provided by enlargement of the existing channels of Baptiste Collette Bayou and Grand-Tigre Passes. Channel dimensions will be 14 feet deep over a bottom width of 150 feet, except for entrance channels which will be 16 by 250 feet. Jetties to reduce the cost of maintenance dredging will be constructed to the -6-foot contour, if and when justified.

The extensive offshore oil operations, most of which are based in Venice, will realize considerable savings in transportation costs using these channels rather than South or Southwest Pass of the Mississippi River. Commercial and sport fishermen and hunters will derive similar time and distance benefits.

The project was authorized by the River and Harbor Act of 1968. Estimated Federal cost (June 1976) is $4,164,000 for construction, plus $88,000 for the U. S. Coast Guard for aids to navigation. Estimated non-Federal cost is $2,108,000. Preconstruction planning funds in the amount of $300,000 were expended through 30 June 1976. Construction is scheduled to begin in the fall of 1977.

Flood Plain Information Reports

PORT OF LAKE PROVIDENCE
(Vicksburg District)

A special flood hazard information report, covering the Mississippi River in the vicinity of the Port of Lake Providence, was prepared as requested by the Executive Director of the Lake Providence Port Commission. The report was completed in August 1970.

Surveys Authorized or Under Way

LAKE PROVIDENCE HARBOR
(Vicksburg District)

A study was completed in 1976 to determine whether modifications to the existing harbor project were advisable. Results of the study indicate that no further modifications to the project are economically feasible. The report is currently under review.

LOUISIANA STATE PENITENTIARY LEVEE, MISSISSIPPI RIVER
(New Orleans District)

This study was initiated in 1976 to review the MR&T project with particular reference to incorporating all or part of the existing levee system at the Louisiana State Penitentiary into the Federal

TRANSPORTATION SAVINGS THROUGH WATERBORNE COMMERCE

levee system. The study is scheduled for completion in 1979.

LOWER MISSISSIPPI REGION COMPREHENSIVE STUDY (Mississippi River Commission)

This study was conducted to provide a framework plan for developing the water and related land resources in the region to meet foreseeable short- and long-term needs. The report was forwarded to the Water Resources Council in May 1975. The report is currently under congressional review.

MISSISSIPPI RIVER, BATON ROUGE TO NATCHEZ, MISSISSIPPI (New Orleans District)

The study was initiated in 1974 to review reports on the Mississippi River, Baton Rouge to the Gulf of Mexico, with particular reference to extending the deepwater navigation project from its present upstream limits at Baton Rouge to Natchez, Mississippi. In 1976 this study was incorporated into the "Mississippi River, Cairo, Illinois, to Baton Rouge, Louisiana," study.

MISSISSIPPI RIVER, CAIRO, ILLINOIS, TO BATON ROUGE, LOUISIANA (Mississippi River Commission)

This study was initiated in 1976 to review reports on the Mississippi River between Cairo and Baton Rouge with a view toward determining whether the existing project should be modified to provide a navigation channel with greater dimensions than now currently authorized. The study is scheduled for completion in 1982.

MISSISSIPPI RIVER– GULF OUTLET (New Orleans District)

This study was initiated in 1968 to review the existing project with particular reference to providing a channel having a minimum depth of 50 feet and a minimum bottom width of 750 feet from New Orleans to the Gulf of Mexico, and a channel from New Orleans to Baton Rouge having a minimum depth of 50 feet and a minimum bottom width of 500 feet. The study is scheduled for completion in 1979.

ATCHAFALAYA RIVER BASIN

ATCHAFALAYA RIVER BASIN

ATCHAFALAYA RIVER BASIN

Introduction

The Atchafalaya River Basin located in south-central Louisiana originates at the confluence of the Mississippi, Red, and Atchafalaya Rivers near Simmesport. The basin extends in a general north-south direction from the latitude of Old River and Bayou des Glaises to the Gulf of Mexico. Improvements in the basin have been constructed and/or authorized primarily under the MR&T project.

Flood protection works in this basin form an integral and extremely important part of the entire project for the control of floods of the Lower Mississippi River. At the latitude of Old River, the design project flood has been determined to be 3,000,000 cubic feet per second. The project allows one-half of the flow to continue down the main river channel and the other half to be introduced through the Morganza and West Atchafalaya Floodways and the Atchafalaya River into the Atchafalaya Basin Floodway. Floodways follow opposite sides of the Atchafalaya River to the end of the levee system along the Atchafalaya River where they merge into a single broad floodway from which flow reaches the Gulf of Mexico through Wax Lake Outlet and the Lower Atchafalaya River. Portions of this project are complete. Planning is under way to develop boating access to the floodway area. It is very important to note, however, that until the entire floodway program is completed, the flood control plan will be only partially effective. Individual projects in the basin are described in the following paragraphs and shown on the map in back of the text.

Projects

MR&T PROJECTS

ATCHAFALAYA BASIN FLOODWAY
(New Orleans District)

The floodway is located between protection levees approximately 15 miles apart extending from the lower limits of the Morganza and West Atchafalaya Floodways at the latitude of Krotz Springs to Morgan City and through the Lower Atchafalaya River and Wax Lake Outlet to the Gulf of Mexico. The improvements necessary to this floodway are described as separate features. (See map in back of this pamphlet.)

ATCHAFALAYA BASIN BANK STABILIZATION
(New Orleans District)

Bank stabilization works are being constructed from above the vicinity of Simmesport to the lower end of the main stem levee system to maintain a

WEST ATCHAFALAYA BASIN PROTECTION LEVEE

favorable alignment for navigation and for protection of the levee system. Through 30 June 1976, 26.3 miles of revetment have been placed.

ATCHAFALAYA BASIN LEVEES
(New Orleans District)

All levees in the Atchafalaya Basin except the guide levees for the Morganza Floodway (page 12) are included under this heading. The levee system is designed to protect agricultural areas and towns from the normal high waters of the Mississippi-Red River backwater area, floods on the Atchafalaya River, and when necessary, to introduce excess floodwaters of the Mississippi and Red Rivers at the latitude of Old River through the Atchafalaya River, the Morganza, West Atchafalaya, and Atchafalaya Basin Floodways to the Gulf of Mexico via Wax Lake Outlet and the Lower Atchafalaya River. The levees also protect valuable agricultural lands below Morgan City and west of Berwick from backwaters created by the floodwater. The system includes about 423 miles of levees and currently will contain a flood of about 1,000,000 cubic feet per second. Work is under way to raise the floodway levees to an elevation to confine a design flow of 1,500,000 cubic feet per second. Individual levee features within the existing Atchafalaya system include the following.

EAST ATCHAFALAYA BASIN PROTECTION LEVEE

The levee begins at the lower end of the east guide levee of the Morganza Floodway, extends southward to and through Morgan City to Cutoff Bayou, and includes the Bayou Boeuf and Bayou Sorrel Locks. The length of this system is 87.8 miles, including 1.3 miles of floodwall along Morgan City front and about 0.4 mile of floodwall below Morgan City. The Atchafalaya Basin Levee District, the city of Morgan City, and the St. Mary Parish Police Jury are responsible for operation and maintenance of this feature.

WEST ATCHAFALAYA BASIN PROTECTION LEVEE

The levee begins near the town of Hamburg

where it joins the Bayou des Glaises fuseplug levee. It extends in a south and southeasterly direction to the Wax Lake Outlet at the latitude of the East and West Calumet Floodgates and thence eastward to and through Berwick to the Gulf Intracoastal Waterway below. This levee extends 126.5 miles and connects with 1 mile of floodwall along the front of the town of Berwick. Structures along the levee include Bayou Darbonne and Courtableau drainage structures, the Charenton Floodgate, and the Berwick Lock, described on pages 35 and 36.

The Red River, Atchafalaya, and Bayou Boeuf Levee District, the Atchafalaya Basin Levee District; the town of Berwick, and the St. Mary Parish Police Jury are responsible for operation and maintenance.

EAST ATCHAFALAYA RIVER LEVEE

The levee extends from the junction of the Atchafalaya, Old, and Red Rivers along the east bank of the Atchafalaya River to approximately 10 miles below Alabama Bayou, a distance of about 51 miles. The Atchafalaya Basin Levee District is responsible for maintenance.

WEST ATCHAFALAYA RIVER LEVEE

The levee extends southward from Bayou des Glaises levee at Simmesport along the west bank of the Atchafalaya River and Bayou La Rose to approximately 2 miles below Butte La Rose, a distance of about 61 miles. Additional levees include the Simmesport ring levee, 1.6 miles in length and its drainage outlet, Brushy Bayou Drainage Structure; Melville ring levee, 4.1 miles in length and its drainage structures; the Krotz Springs ring levee, 1.7 miles in length; and the Krotz Springs levee south of the Missouri Pacific Railroad, 2 miles in length. The total length of levee in this system is about 70 miles. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance of the portion of this levee from Simmesport to Bayou Courtableau. The remaining portion is maintained by the Atchafalaya Basin Levee District.

BAYOU DES GLAISES FUSEPLUG LEVEE

The levee extends from the town of Simmesport west and along the south bank of Bayou des Glaises to the West Atchafalaya Basin protection levees near Hamburg, a distance of approximately 8 miles. This levee protects the lands in the West Atchafalaya Floodway from floodwaters in the Mississippi-Red River backwater area until stages requiring the use of the West Atchafalaya Floodway are reached. Floodwaters will then enter the floodway by overtopping the levee. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance.

MANSURA HILLS TO HAMBURG LEVEE

The levee extends from the Mansura Hills, along the north bank of Bayou des Glaises to the State-owned drainage structure in Bayou des Glaises (Bordelonville Floodgate), across the structure and southward to the junction of the West Atchafalaya Basin protection levee and the Bayou des Glaises fuseplug levee near the town of Hamburg. This 20-mile levee protects the area west of the floodways and west of Marksville from Mississippi-Red River backwater flooding. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance.

LEVEES WEST OF BERWICK

A total of approximately 58 miles of intermittent levees tying into high ground are west of Berwick. They have been designed to protect the cultivatable lands along the Teche and Salé Ridges from the backwaters created by the introduction of floodwaters from the Mississippi and Red Rivers through the floodways, the Wax Lake Outlet, and the Lower Atchafalaya River.

The levee system begins at the lower end of the West Atchafalaya Basin protection levee below Berwick and extends westward generally along the north bank of the Intracoastal Waterway and east bank of Wax Lake Outlet, to the East Calumet

Floodgate. It continues on the opposite side of Wax Lake Outlet at the West Calumet Floodgate following a southerly and westerly direction along Wax Lake Outlet and the north bank of the Gulf Intracoastal Waterway to high ground at Bayou Salé, then following along an irregular alignment around the Bayou Salé Ridge below the Intracoastal Waterway and northward above the Intracoastal Waterway to the Charenton Drainage Canal near Baldwin.

Drainage for the enclosed area is through about 38 miles of canals, 3 drainage structures, 20 gated culverts, an inverted siphon, and pumping stations.

The Maryland, Ellerslie, Franklin, Bayou Yokely, Bayou Yokely Enlargement, Wax Lake East, and North Bend Pumping Stations, 19 of the gated culverts, and the Wax Lake East and Wax Lake West Drainage Structures are complete. The Wax Lake East inverted siphon was completed in August 1963. The Wax Lake West Pumping Station was completed in April 1965. Enlargement of the Franklin Pumping Station was begun in July 1976 and is scheduled for completion in October 1977.

WEST ATCHAFALAYA BASIN PROTECTION LEVEE, LANDSIDE DRAINAGE IMPROVEMENTS (New Orleans District)

Drainage intercepted by the West Atchafalaya Basin protection levee is provided for under this project by enlargement of the landside borrow pit and natural streams in the area. Features of these improvements are as follows.

BAYOU DES GLAISES DIVERSION CHANNEL, STATE CANAL, AND BAYOU ROSEAU

The Bayou des Glaises Diversion Channel, completed in 1939, connects Bayou des Glaises with the landside borrow pit of the West Atchafalaya Basin protection levee. This channel will operate at full capacity when the State-owned floodgate on Bayou des Glaises near Bordelonville is closed. Other landside drainage intercepted by the Mansura Hills to Hamburg levee is taken off by the enlarged channel of State Canal and Bayou Roseau between Mill Bayou and the main diversion channel which was completed in 1943. The cost of these improvements was $228,000.

BAYOU DES GLAISES CULVERT

The culvert consists of a 72-inch corrugated pipe culvert with flap gate and concrete stilling basin. It passes through the Old Bayou des Glaises levee connecting the floodway side borrow pit of the Bordelonville-Hamburg levee with Bayou des Glaises proper, and provides an outlet for the water accumulating within the Bayou des Glaises loop. It was completed in 1939 at a cost of $26,000.

BORROW PIT ENLARGEMENT BETWEEN HAMBURG AND COURTABLEAU

Enlargement of inadequate sections of the borrow pits was completed in 1939 at a cost of $345,000.

BAYOU DARBONNE DRAINAGE STRUCTURE

The structure is located in the West Atchafalaya Basin protection levee at the Bayou Darbonne crossing and consists of a reinforced-concrete box culvert 10 by 10 by 265 feet long, with a motor-controlled gate. This structure is used during low stages on the landside to permit flow, when possible, from the West Atchafalaya Floodway to Bayou Teche through Bayou Courtableau and thereby provides water frequently needed for irrigation purposes. During landside flood stages floodwaters in the borrow pit pass through the structure to the floodway. It will be closed during operation of the West Atchafalaya Basin Floodway. The structure was completed in 1941 at a cost of $60,000 and is operated by the U. S. Army Corps of Engineers.

BAYOU COURTABLEAU DIVERSION CHANNELS AND CONTROL STRUCTURE

The original channel of Bayou Courtableau was

blocked by construction of the West Atchafalaya Basin protection levee extending to the levee borrow pit. To retain and introduce low-water flow into Bayou Teche at Port Barre for use in rice irrigation in the Teche and Vermilion River Basins where it is frequently needed, two reinforced-concrete weirs with crests of 18.0 feet above mean sea level were constructed on the south bank of Bayou Courtableau just west of the West Atchafalaya protection levee. Flood flows pass over the weirs into two adjacent channels excavated below the weirs, then into the borrow pit below. The width of the east weir is 482 feet and the west weir, 517 feet. The diversion channels were completed in 1939 at a cost of $36,700, and the structures were completed in 1942 at a cost of $14,500. The structures are operated and maintained by the U. S. Army Corps of Engineers.

COURTABLEAU DRAINAGE STRUCTURE AND CHANNELS

The structure and channels are located approximately 2 miles southeast of the village of Courtableau in St. Landry Parish. Construction of the West Atchafalaya Basin protection levee intercepted the natural drainage of the Bayou Courtableau Basin, located west and north of the levee. The feature consists of a five-barrel (each 10 feet wide and 15 feet high), reinforced-concrete, box-type culvert 220 feet long with five mechanically operated vertical-lift gates at the outlet end; an inlet channel approximately 1,800 feet long; an outlet channel approximately 23,500 feet in length; a 1,300-foot levee along the south bank of the inlet channel with a 12-foot-wide gravel road on the crown; and guide levees on both banks of the outlet channel for confining drainage flows passed through the structure. The feature was completed in 1950 at a cost of $1,400,000.

BAYOU BERARD DRAINAGE CANAL

The canal extends from the landside borrow pit in the vicinity of Cypremort, about 3 miles below Henderson, to the head of Lake Catahoula, a distance of 7 miles. Enlarged twice, it now has a bottom width of 65 feet, 15 feet below mean sea level. Flow through this enlarged channel supplements the runoff through the borrow pit. It was completed in 1940 at a cost of $277,000.

CYPREMORT TO DAUTERIVE

Channel improvement from Cypremort to Dauterive extends in a southerly direction in the landside borrow pit, commencing about 1 mile south of Cypremort and ending opposite the head of Lake Dauterive, a distance of 14.3 miles. The borrow pit was enlarged, and Bayou Mercier and two distributaries of Lake Catahoula were improved. The channel and the Bayou Berard Drainage Canal are supplemental improvements. The channel was completed in 1941 at a cost of $791,000.

CHARENTON DRAINAGE CANAL

This canal is a drainage connection extending from the Charenton Floodgate to Bayou Teche and thence along Bayou Teche and a new land cut to West Cote Blanche Bay, an arm of the Gulf of Mexico. It provides an outlet for the intercepted drainage carried by the West Atchafalaya Basin protection levee borrow pit. The canal has a bottom width of 75 feet, 30 feet below mean sea level, and a design discharge capacity of approximately 22,000 cubic feet per second. This improvement required the construction of one railroad bridge and three highway bridges. It was completed in 1948 at a cost of $2,955,000.

EAST ATCHAFALAYA BASIN PROTECTION LEVEE, LANDSIDE DRAINAGE IMPROVEMENTS
(New Orleans District)

After closure of the Bayou Pigeon navigation connection and during the construction of the Bayou Sorrel Lock (page 37) drainage intercepted by the East Atchafalaya Basin protection levee was provided for by enlarging portions of the borrow pit and nearby streams. These improvements serve as a navigation route between Bayou Sorrel Lock and the

Intracoastal Waterway. Although about 22 miles longer than the project route between Port Allen and Morgan City, the landside route affords easier navigation in times of flood and swift currents. During times of low rainfall east of the levee, fresh water may be passed through Bayou Sorrel and Port Allen Locks into the channels east of the levee. The drainage improvements are described below.

LOTTIE TO BAYOU MARINGOUIN BORROW PIT ENLARGEMENT

This improvement consists of the enlargement of the restricted sections of the landside borrow pit between a point one-quarter mile south of Lottie and Bayou Maringouin. Work was completed in 1940 at a cost of $126,000.

BAYOU BOEUF-BAYOU LONG DRAINAGE CANAL AND ENLARGEMENT OF BAYOU CHENE

The improvement of existing streams along the landside of the East Atchafalaya Basin protection levee from the Bayou Sorrel Lock to the vicinity of Lake Palourde, a new land cut around the east side of Lake Palourde to Bayou Boeuf, and the enlargement of Bayou Boeuf to provide a minimum channel of 9 by 100 feet for drainage and navigation from the Intracoastal Waterway to the levee borrow pit were the features of this project. The improvements were completed in 1947 at a cost of $501,000.

ATCHAFALAYA RIVER IMPROVEMENT DREDGING (New Orleans District)

Improvement dredging of the leveed channel of the Atchafalaya River and of its outlets is provided under this feature. Work includes the enlargement of the openings of existing railroad and highway bridges across the Atchafalaya River, and such alterations of existing crossings of this river as are deemed necessary to the execution of the plan. Other restricted sections of the channel are to be enlarged to increase the flood flow capacity of the Atchafalaya River. The improvement extends from the confluence of the Red, Old, and Atchafalaya Rivers to Alabama Bayou, Mile 57. All work has been completed, unless at a later date it is found that additional improvements are required. The costs of construction to date are as follows:

Item	Amount*
Dredging	$1,080,000
Simmesport highway and railroad bridge 897-foot extension and 3 deep piers (1937)	986,000
N.O.T. & M. Railway bridge at Krotz Springs 1,270-foot extension and 2 deep piers (1937)	824,000
Fascine mattresses	68,000
Raising entire bridge 6 feet (1953)	370,000
T. & P. Railway bridge at Melville extension (1952)	1,250,000
Total for feature	$4,578,000

* The nonconstruction costs for the improvement are included in the overall project cost.

ATCHAFALAYA BASIN MAIN CHANNEL IMPROVEMENT DREDGING (New Orleans District)

The flood-carrying capacity of the Atchafalaya is being preserved by dredging a continuous main channel through the swamps of the central portion of the basin. The capacity of the floodway is being reduced by sedimentation in the floodway. The main channel will preserve floodway capacity and reduce wetland loss by reducing overbank sedimentation in the lower Atchafalaya floodway. The dredging extends from the Atchafalaya River at Alabama Bayou to the main body of Sixmile Lake near Morgan City. No work has been performed on this feature since December 1968. The need and feasibility of continued channel dredging is being considered as a part of the Atchafalaya Basin (Water and Land Resources) study currently under way. Estimated costs for this feature are:

Item	Amount
Dredging	$ 45,470,000
Dredging (future)	144,245,000
Pipeline and utilities (completed)	914,000
Pipeline and utilities (future)	11,539,000
Total for feature	$202,168,000

RAILROAD BRIDGE AT BERWICK
(New Orleans District)

To accommodate the introduction of additional floodwaters through the Atchafalaya Basin, the Texas and New Orleans (Southern Pacific) railroad bridge at Berwick was raised 4 feet. Work was completed in 1942 at a cost of $360,000. Further modification of this bridge for navigation has been directed under the Truman-Hobbs Act.

WAX LAKE OUTLET
(New Orleans District)

This outlet, with a present capacity of 300,000 cubic feet per second, was constructed to provide additional means for conveyance of floodwaters from the Atchafalaya Basin to reduce flood heights and to protect, during extreme floods, the cultivable lands along the Teche and Boeuf Ridges and vital transcontinental routes of communication at the latitude of Morgan City. This dredged channel, located about 10 miles west of Berwick, extends from Sixmile Lake through the Teche Ridge and Wax Lake into Atchafalaya Bay, a distance of about 15.7 miles.

The channel has a bottom width of 300 feet from Sixmile Lake to a point one-half mile below Bayou Teche and of 400 feet below that point, and a uniform depth of 45 feet below mean sea level. The excavated material from the channel dredging was used to construct guide levees extending from the West Atchafalaya Basin protection levee to the Intracoastal Waterway on each side of the outlet.

The East and West Calumet Floodgates, described in the following paragraph, were constructed where the guide levees cross Bayou Teche to allow continued navigation and to regulate flood flows to some extent. New bridges were constructed to carry U. S. Highway 90 and the Southern Pacific lines over the dredged channel.

This improvement was completed in 1942 at a cost of $7,122,000, and is maintained by the U. S. Army Corps of Engineers except for the bridges which are maintained by their owners.

EAST AND WEST CALUMET FLOODGATES
(New Orleans District)

These floodgates are located in the East and West Wax Lake Outlet guide levees where the levees cross Bayou Teche. Each floodgate is a reinforced-concrete structure 161 feet long with a 45-foot clear width, a sill 9.8 feet below mean sea level, and steel sector gates.

The floodgates allow navigation in Bayou Teche and to some extent regulate flood flows. They were completed in 1950 at a cost of $1,320,000. Operation and maintenance are the responsibility of the U. S. Army Corps of Engineers.

CHARENTON FLOODGATE
(New Orleans District)

This floodgate is located in the West Atchafalaya Basin protection levee, about 1 mile north of Charenton. It is a reinforced-concrete structure 175 feet long with a clear width of 45 feet, a bottom 10.8 feet below mean sea level, and steel sector gates.

The floodgate regulates flows between Bayou Teche and the Atchafalaya Basin Floodway and affords a navigation connection between Grand Lake and the West Atchafalaya Basin protection levee borrow pit and Charenton Drainage Canal. In 1951 a removable bridge with a low steel elevation of 20.7 feet, mean sea level, was constructed across the structure. The floodgate was completed in 1948 at a cost of $298,000. Charenton Floodgate is operated by the U. S. Army Corps of Engineers.

EAST CALUMET FLOODGATES

WEST CALUMET FLOODGATES

BERWICK LOCK
(New Orleans District)

Located in the west protection levee near its crossing of the Lower Atchafalaya River about 2 miles north of the town of Berwick, this lock is a reinforced-concrete structure 45 feet wide with sills 9.0 feet below mean sea level and a usable length of 300 feet between steel sector gates. It affords a navigation passage through the levee and permits navigation up the Lower Atchafalaya River to Patterson and to Bayou Teche. The lock was

completed in 1951 at a cost of $2,100,000 and is maintained by the U. S. Army Corps of Engineers. Tonnage data are not collected because the lock is operated only a portion of the year.

BAYOU SORREL LOCK
(New Orleans District)

This lock, located in the East Atchafalaya Basin protection levee at its intersection with the Morgan City-Port Allen Route to the Gulf Intracoastal Waterway, about 15 miles below Plaquemine, provides a navigation connection through the levee. The structure consists of two reinforced-concrete gate bays equipped with steel sector gates and connected with an earth chamber having a timber guide wall on one side. The usable length is 790 feet, the clear width is 56 feet, and the depth over the sills is 15 feet at mean low water.

The navigation route between Port Allen and Morgan City through the lock is about 22 miles shorter than the landside waterway. The lock was completed in October 1952 at a cost of $4,700,948 and is operated and maintained by the U. S. Army Corps of Engineers. Average annual traffic through the lock, 1971-1975, was 15,720,542 tons.

BAYOU BOEUF LOCK
(New Orleans District)

This lock is located in the East Atchafalaya Basin protection levee below Morgan City at a point where it crosses Bayou Boeuf and the Intracoastal Waterway. It consists of two reinforced-concrete gate bays equipped with steel sector gates connected by an earth chamber which has a timber guide wall on both sides. The lock has a length of 1,148 feet, a clear width of 75 feet, and a depth over sills of 13 feet at mean low Gulf level. The Bayou Boeuf Lock provides for navigation through the levee which protects the areas and communities east of Morgan City from the floodwaters from the Atchafalaya Basin. It was opened to navigation in September 1954 and dredging of all approach channels together with

BAYOU BOEUF LOCK

other improvements was completed early in 1955. The lock, excluding approach channels, was completed at a cost of about $2,754,000. It is operated and maintained by the U. S. Army Corps of Engineers. Average annual traffic through the lock, 1971-1975, was 26,243,682 tons.

IMPROVEMENTS FOR ACCESS, FISH AND WILDLIFE, AND RECREATION (New Orleans District).

A program has been initiated to minimize disruption to basin access and damage to the fish and wildlife resource occasioned by the construction of the flood control improvements. A recreation master plan prepared in the New Orleans District is being considered for approval. Under this plan, 20 recreation areas including parking and launching facilities will be constructed. These areas will be managed and maintained by local interests. In addition to the above, positive measures are being taken on all hydraulic dredging done in the basin to ensure that all excavated material is confined to designated areas, and that all liquid effluent from the dredging process is returned to the main channel.

EAST AND WEST ACCESS CHANNELS

This feature consists of channels, 7 by 80 feet, which provide navigable connections between the East and West Atchafalaya guide levees. They are used by both commercial and recreational craft and permit basin-wide access to and from the main channel. An additional function of these channels is to distribute fresh water to the overbank areas which they traverse.

EAST AND WEST FRESHWATER DISTRIBUTION CHANNELS

These channels are being maintained to distribute fresh water on the east and west sides of the Atchafalaya Basin during seasons of low water on the Atchafalaya River system. The intermittent

FISHING IN LOUISIANA BAYOUS

overflow from these channels is beneficial to fishing and hunting activities in the area.

EAST AND WEST FRESHWATER DIVERSION STRUCTURES

These structures will be constructed in the Atchafalaya River levees at Sherburne and the vicinity of Bayou Courtableau to supply fresh water from the Atchafalaya River to the marshlands on both the east and west sides of the river. Each structure will consist of two 10- by 10-foot gated culverts.

Water introduced by gravity flow into the Ramah area of the Atchafalaya Basin Floodway, east of the Atchafalaya River, will be distributed by the structure at Sherburne through Big Alabama Bayou, Bayou des Glaises, and connecting channels. Water introduced into the Henderson area of the Atchafalaya Basin Floodway, west of the Atchafalaya River, will be distributed by the Bayou Courtableau structure through Little Fordoche Bayou and connecting swamp channels.

RETENTION DIKES

Prior to dredging in the Atchafalaya Basin, a system of dikes, ditches, and weirs are constructed to prevent damage to high-value habitat. The dikes serve to confine excavated material to carefully chosen areas, while the ditches and weirs return spill water from the dredging process to the main channel. The system will thus preclude the incursion of sediments into existing off-channel open-water areas and hence minimize alteration of the basin's unique environment.

As part of the plan, an existing opening in the main channel bank at Pat's Throat will be maintained. Openings at Jakes Bayou and "The Crevasse" will also be maintained if experience shows that this is practicable.

ATCHAFALAYA RIVER
(New Orleans District)

Channel work on the Atchafalaya River, completed in February of 1956 at a cost of $303,500, is a navigation feature of the MR&T project. The channel, 12 feet deep over a bottom width of 125 feet, extends from the Gulf Intracoastal Waterway at Morgan City to the Mississippi River via the Atchafalaya and Old Rivers. As a shortcut from the Gulf to the upper Mississippi, this project affords travel savings of 172 miles and eases port congestion at New Orleans. Average annual traffic, 1971-1975, was 4,675,890 tons, with 2,598,038 tons reported in 1975.

LOWER RED RIVER
(New Orleans District)

This project is a main stem feature of the MR&T project. It consists of about 60 miles of levees designed to prevent Mississippi River backwater from entering the alluvial lands south of the Red River and also protect against headwater floods on the Lower Red River. Improvements extend from Hotwells to Moncla along the right bank of Red River.

Bank stabilization works, including dikes and/or revetments, are being placed at locations where caving banks constitute a threat to the levee's integrity and levee setbacks would be uneconomical. A surfaced road will be constructed for the entire length of the levee.

Some 47 miles of levee, about 78 percent of the total length, have been completed to final grade and section. The remainder, while incomplete to some degree, does provide a high degree of protection. The estimated cost is $31,400,000, of which $11,992,000 has been allotted through 30 September 1976.

During 1956, the right bank levee, a local levee between Moncla and Lake Long, was rehabilitated to consistent grade and uniform cross section. The work was accomplished under Section 6 of the Flood Control Act of 1920. Total cost was $117,300, of which approximately $39,000 was contributed by local interests. This particular section of levee is still maintained by local interests.

The Coulee des Grues Culvert is a triple 8- by 8-foot barrel-gated structure located in the

ATCHAFALAYA BASIN

IMPROVEMENTS FOR ACCESS, FISH AND WILDLIFE, AND RECREATION IN THE ATCHAFALAYA BASIN.

embankment where Louisiana State Highway 1 crosses over Coulee des Grues. The structure closes a gap in the hills which extends from the West Atchafalaya Basin protection levee to the south bank of Red River levees. The culvert was originally built by local interests in connection with construction of the highway. During periods of high water in the Red River backwater area, the structure is closed.

As originally constructed, the highway embankment was deficient in cross section required for a levee. Modifications consisted of extending the structure, installing manually operated gates, and enlarging the embankment. In 1954 the U. S. Army Corps of Engineers completed the modification at a cost of $59,000. Maintenance of this feature is the responsibility of the Red River, Atchafalaya, and Bayou Boeuf Levee District.

BAYOU COCODRIE AND TRIBUTARIES
(New Orleans District)

Authorized under the Flood Control Act of August 1941, this project provides for construction of a 59.8-mile diversion channel from Bayou Rapides west of Alexandria to Bayou Courtableau above Washington; clearing and snagging of 2.2 miles of Bayou Boeuf; enlargement of 14.9 miles of Bayou Boeuf; enlargement of 15.3 miles of Bayou Cocodrie; and clearing and snagging of 10.0 miles of Bayou Cocodrie. Gated control structures are located at the head of the diversion channel and in Bayou Lamourie. A fixed-crest weir near Lecompte ensures equitable low-water flow in Bayou Boeuf.

This project has been modified to provide for the construction of the Washington-Courtableau Diversion Channel from the lower end of the Bayou Cocodrie Diversion Channel near the town of Washington to the Bayou Courtableau Drainage Structure to augment the capacity of Bayou Courtableau, and for the construction of a three-barrel drainage structure adjacent to the Bayou Courtableau Drainage Structure to provide for diversion of the increased flows generated by the new channel into the floodway.

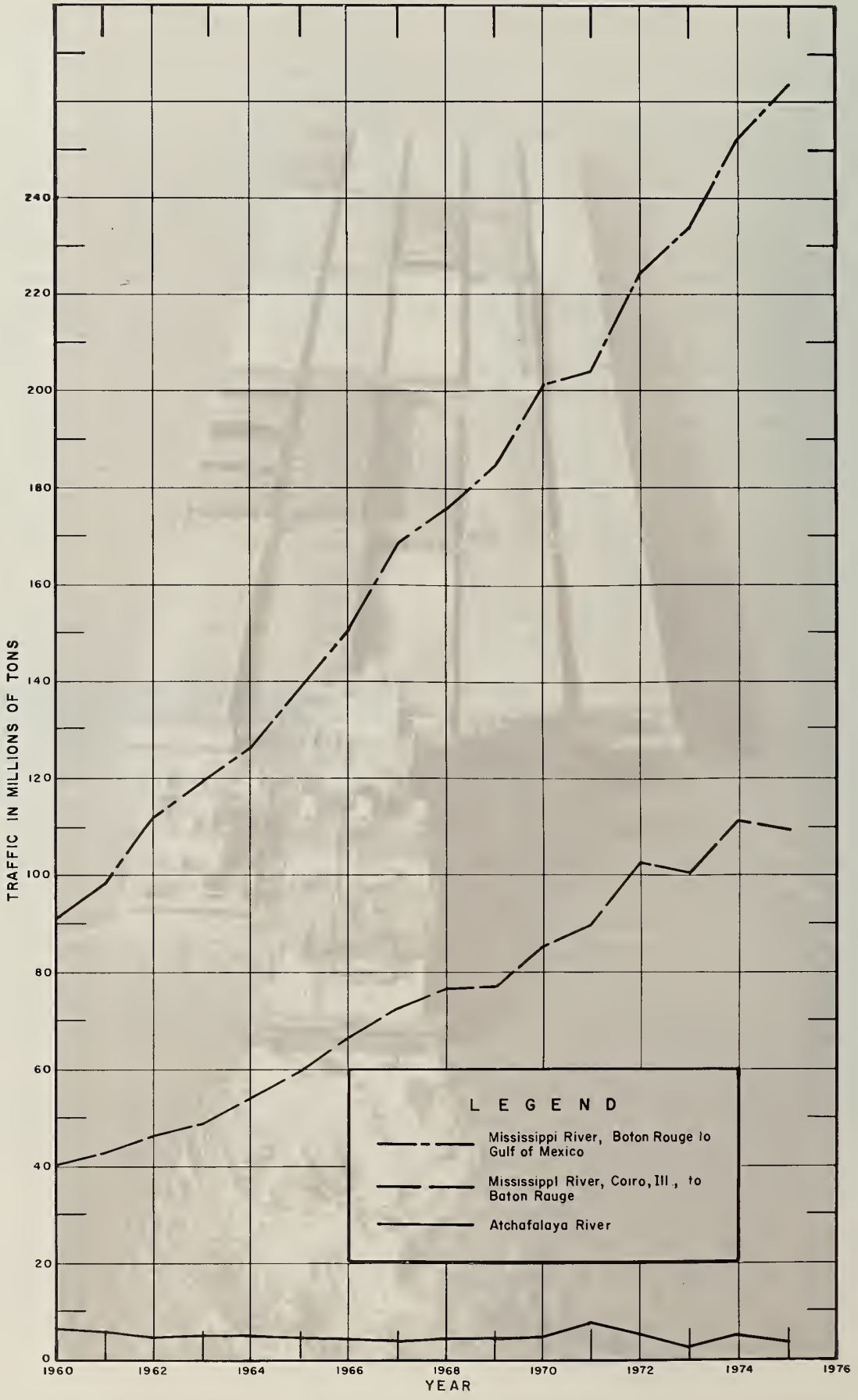
Authorized in 1941, the project is complete except for the enlargement of 13.5 miles of upper Bayou Boeuf and the channel improvement of 25.3 miles of Bayou Cocodrie. This work was delayed pending solution of the flood problem at and below the lower end of the Bayou Cocodrie Diversion Channel which would be aggravated by the improvements of Bayous Boeuf and Cocodrie.

Section 87 of the Water Resources Development Act of 1974 authorized the enlargement of Bayou Courtableau from the town of Washington to the West Atchafalaya Basin protection levee, in lieu of construction of the previously authorized Washington-Courtableau Diversion Channel. Associated rights-of-ways and excavated material areas will be provided at Federal expense. This act also authorized construction of additional culverts through the West Atchafalaya Basin protection levee to provide for the increased flow. Detailed planning was initiated in fiscal year 1976 and is presently continuing.

The estimated total cost of the project as of 30 June 1976 was $15,750,000, of which $15,550,000 is Federal. The Federal cost for the completed portion as authorized in 1941 is $3,423,700. The project when completed will reduce flood damages over an area of 61,700 acres. The cumulative benefits consisting of flood damages prevented as of 30 June 1976 are estimated at $2,980,000. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance and operation of all completed portions of the project except bridges for which owners are responsible. The uncompleted features of the project and alternatives to these features are being reviewed in the Bayous Rapides, Boeuf, and Cocodrie and outlets survey study (see page 122).

EASTERN RAPIDES AND SOUTH-CENTRAL AVOYELLES PARISHES
(New Orleans District)

Flooding and poor drainage are serious problems in the Chatlin Lake, Choctaw Bayou, and Bayou du Lac drainage areas along the south bank of Red River from Alexandria to the Red River backwater area



TRAFFIC ON MAJOR WATERWAYS

INDUSTRIAL DEVELOPMENT ON BAYOU BOEUF

and, to a lesser extent, along Bayou des Glaises and the West Atchafalaya Basin protection levee. About 206,000 acres in this area are subject to flooding.

In this primarily agricultural area, major crops include soybeans, pasture, cotton, and corn, while rice and sugarcane play a less important role. The Corps of Engineers and the U. S. Soil Conservation Service have coordinated their studies in an effort to develop a combination of flood control and drainage improvements that will result in the greatest benefits in the form of flood damages prevented and increased crop yield.

Authorized by the Flood Control Act of December 1970, the work to be done by the Corps consists primarily of enlargement of the existing channels of Chatlin Lake Canal, Bayou du Lac, Bayou des Glaises, with a new land cut to the Bayou des Glaises Diversion Channel, and the West Atchafalaya Basin protection levee borrow pit to the vicinity of U. S. Highway 190; diversion of the borrow pit flows into the floodway; an outlet channel into the Atchafalaya Basin Floodway; a control structure in the borrow pit; and an excavated material bank levee along the west side of the enlarged West Atchafalaya Basin protection levee borrow pit from U. S. Highway 190 to vicinity of Palmetto; rectification of drainage intercepted by excavated material bank levees; and Federal acquisition of the Lake Pearl area.

Several features of this project will help maintain and enhance existing fish and wildlife and recreational use within the area. Lake Pearl will be turned over to the Louisiana Wild Life and Fisheries Commission for management. An overflow weir will be constructed at the eastern edge of the lake to generally maintain existing low-water conditions for commercial crawfish production. Other features of the project will include such improvements as weirs to maintain fish and wildlife production and a boat-launching facility and access channel to offset loss of existing access to the highway from camps along the borrow pit and Bayou Courtableau.

Cost of Corps of Engineers work is estimated at $31,900,000 and non-Federal cost at $2,210,000. Postauthorization studies are under way and scheduled for completion in 1979.

LOWER ATCHAFALAYA RIVER BASIN PROJECTS

Two navigation projects and one hurricane protection project, located in the Lower Atchafalaya River Basin, have been authorized. These projects, described below, are not a part of the MR&T project.

ATCHAFALAYA RIVER AND BAYOUS CHENE, BOEUF, AND BLACK (New Orleans District)

Now being constructed, this waterway will afford transportation for large offshore drilling equipment being built by industries in the area and for personnel and equipment servicing offshore drilling operations.

As authorized by the River and Harbor Act of 1968, a channel will be constructed from the vicinity of U. S. Highway 90 at Bayou Boeuf to the Gulf of Mexico. The channel will follow a route along reaches of the Gulf Intracoastal Waterway and Bayou Chene, through the Avoca Island-Cutoff Bayou drainage channel to the Lower Atchafalaya River, and from there through the existing project across the Atchafalaya Bay to the 20-foot depth contour in the Gulf of Mexico.

The channel will be 20 feet deep with a bottom width of 400 feet, except in Bayou Boeuf where industrial development on both sides of the bayou will necessitate a 300-foot-wide channel. A 20- by 400-foot channel will also be constructed from the major shipyard on Bayou Black at U. S. Highway 90 through the Gulf Intracoastal Waterway to Bayou Chene.

Estimated cost of the project is $20,313,000

Federal, including $13,000 for navigation aids, and $1,790,000 non-Federal. Construction was initiated in April 1974 on the bay and Gulf reaches and was completed in December 1974. Construction is scheduled to begin in April 1977 on the reach from Bayou Black to Bayou Chene and is scheduled to be completed in May 1979.

ATCHAFALAYA RIVER, MORGAN CITY TO GULF OF MEXICO (New Orleans District)

Prior to 1954, traffic on the waterway consisted primarily of shells and averaged less than 500,000 tons per year. Since that time, however, the burgeoning offshore oil industry has expanded traffic in dramatic fashion. Average annual traffic for the period 1971-1975 was 4,181,470 tons.

Authorized by the River and Harbor Act of June 1910, this project consists of a 20- by 200-foot channel approximately 16 miles long from the 20-foot depth contour in Atchafalaya Bay to the same contour in the Gulf of Mexico.

Traffic sufficient to warrant maintenance to current project dimensions did not immediately develop. Maintenance dredging provided a 10- by 100-foot channel in 1939, 1947, and 1948; a 14- by 125-foot channel in 1957 and 1958; a 16- by 200-foot channel in 1962-1966; and a 20- by 200-foot channel in 1974. Total costs have been $501,963 for construction and $7,516,152 for maintenance to date. The project will be superseded by the Atchafalaya River and Bayous Chene, Boeuf, and Black project when completed.

However, in the interim the channel was modified to dimensions of 20 by 400 feet in 1974 under the new project. Total cost for maintenance of the modified project to date is $1,692,113.

MORGAN CITY AND VICINITY HURRICANE PROTECTION (New Orleans District)

Features of this project include the construction of 9.2 miles of new levees, enlargement of 21.6 miles of existing levees, construction of flap-gated drainage structures and a floodgate, and alteration of 5 existing pumping stations and 11 drainage culverts.

The purpose of the project is to provide hurricane flood protection for developed residential, industrial, and commercial areas extending from the vicinity of Morgan City to the Charenton Drainage and Navigation Canal. The total value of improvements to be protected by the project is estimated at $70,000,000. Estimated first cost is $23,000,000 of which $14,900,000 is Federal and $8,100,000 is to be borne by non-Federal interests. The project has been delayed because of right-of-way problems.

Flood Insurance Studies

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, the Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Atchafalaya River Basin are listed below.

	Study Area
Completed:	None
Under way:	Berwick
	Melville
	Morgan City
	Patterson
	Simmesport

ATCHAFALAYA BASIN (WATER AND LAND RESOURCES) (New Orleans District)

A comprehensive study of the Atchafalaya Basin was initiated in 1968. The purpose of the study is to develop a comprehensive plan for the management and preservation of water and related land resources in the basin. Measures under consideration include modifications, extensions, additions, and operational changes in existing flood control systems. A completion date for the study has not yet been determined. An interim report to consider continued development of the Atchafalaya main channel and other multipurpose features for flood control and environmental development is scheduled for completion in 1979.

BERWICK LOCK, ATCHAFALAYA RIVER BASIN (New Orleans District)

The study will determine whether the replacement of Berwick Lock in the West Atchafalaya Basin protection levee, St. Mary Parish, by a larger lock is justified in the interest of flood control, navigation, drainage, and other allied purposes. The study was initiated in 1976 and is scheduled for completion in 1980.

CATAHOULA-CHARENTON AREA (New Orleans District)

This study was initiated in 1968 to determine the advisability of providing a navigation channel in the Atchafalaya Basin Floodway along the levee from the vicinity of Catahoula to Grand Bayou and a navigation channel from Lake Dauterive to Bayou Teche via Lake Fausse Pointe and the Charenton Drainage and Navigation Canal. A completion date for the study has not yet been determined.

OUACHITA RIVER BASIN

OUACHITA RIVER BASIN

OUACHITA RIVER BASIN

Introduction

This basin is that area in Louisiana between the Tensas River Basin and the North Bank Red River backwater levees. Drainage from the upper basin originates in Arkansas. Varied improvements for navigation and flood control have been constructed and other features are under construction and authorized, primarily under the MR&T project. The primary feature in the basin is the development of a 9-foot navigation project to Camden, Arkansas. Separate features in Louisiana are described below.

Projects

OUACHITA AND BLACK RIVERS (9-FOOT NAVIGATION PROJECT), ARKANSAS AND LOUISIANA (Vicksburg District)

Improvement of this waterway was first authorized in 1871. Work on the original project was completed in 1926, and provided a navigable depth of 6-1/2 feet from the mouth of Black River in Louisiana to Camden, Arkansas, a distance of 351 miles.

Total costs of the 6-1/2-foot project have been $5,248,600 for construction. Construction of the portion of the waterway in Louisiana cost approximately $3,418,300.

The River and Harbor Acts of 1950 and 1960 modified the original project to increase the navigable depth from the present 6-1/2 to 9 feet beginning at the mouth of Red River and extending to Camden, Arkansas, on the Ouachita River. The purpose of the current navigation project is to provide a 9-foot-depth channel in order to permit the free interchange of river traffic between the Mississippi and Ouachita Rivers. In addition, the project will provide improvements to increase area recreational opportunities and improve the fish and wildlife environment.

Construction of four new locks and dams will replace the six obsolete structures. Improvements will include channel rectification and dredging as necessary. The two new locks and dams in Louisiana are complete, one near Jonesville and the other at Columbia. Each of the new locks is 84 feet wide and 600 feet long and impounds a slack-water pool approximately 100 miles long. The Jonesville and Columbia locks and dams were placed in operation in June 1972 and provide a 9-foot navigation channel from the mouth of Red River to Old Lock and Dam No. 6 near Felsenthal, Arkansas, upstream from the Louisiana-Arkansas State line. For information on the two new locks and dams in Arkansas, see the Arkansas Water Resources Development pamphlet.

Average annual traffic for the Ouachita-Black waterway was 830,000 tons in the 1971-1975 period. Traffic in 1975 was estimated at 1,030,000 tons.

In connection with the Jonesville lock and dam, the channel has been completed for the diversion of flows from Catahoula Lake into Black River downstream from the lock and dam. The structure for control of flows from Catahoula Lake to the diversion channel has been placed in operation. These features allow for regulation of stages in the lake to permit its continued use as a waterfowl refuge and resting and feeding area for migratory waterfowl. Construction of the closure dam on Little River is also complete. Authorization of the Columbia lock and dam includes acquisition of 18,000 acres of land for use as a national fish and wildlife refuge along Bayou D'Arbonne.

Recreation facilities including boat launching ramps, picnic tables, and camping sites have been provided by the Corps of Engineers. These facilities, completed in 1973, are located adjacent to the Columbia and Jonesville lock and dam pools.

The total Federal cost of this project modification as of 30 June 1976 is estimated to be $184,000,000. Estimated non-Federal costs are $5,187,000.

OUACHITA RIVER AND TRIBUTARIES, ARKANSAS AND LOUISIANA (Vicksburg District)

Authorized by the Flood Control and River and Harbor Act of 1950, this project is a comprehensive plan for flood control, power, and other purposes for the Ouachita River and Tributaries. The project provides varying degrees of flood control to a large area in the Ouachita River Basin. Protection to Monroe, West Monroe, Columbia, and Bawcomville, Louisiana, and Calion, Arkansas, is one of the important features of the project. A booklet, Water Resources Development in Arkansas, discusses the features located in that State. The flood control features in Louisiana are described in the following paragraphs.

The Ouachita River levees extend from Bastrop along the south bank of Bayou Bartholomew and the east bank of the Ouachita River to the vicinity of Sandy Bayou approximately 74 miles below the city of Monroe. Included in the Ouachita levee work were protection levees and other improvements for Monroe, West Monroe, Bawcomville, and Columbia, Louisiana. The levee work is complete except for a 5.7-mile extension of the levee to Sandy Bayou, and raising low reaches of the levee to the approved grade and construction of gravel road thereon. A gravel road has been completed on 12.9 miles of the levee and raising of 12.5 miles of low reaches of the levee was initiated in August 1974. Total cost of the levee and protection works for the various cities was $3,911,000 ($3,405,000 Federal; $325,000 PL-99 funds; and $181,000 non-Federal).

The levee at Monroe includes 1.6 miles of floodwall, with a 1,750-foot gap near the center. The Federal cost of the floodwall, excluding the gap in the floodwall, was $573,000. Closure of the 1,750-foot gap was authorized by the Flood Control Act of 1966. Federal cost of the gap closure was $2,420,000. The non-Federal cost was $206,000.

On the west bank of the Ouachita River there are loop levees around the towns of West Monroe, Bawcomville, and Columbia.

The West Monroe protection includes 5.5 miles of levee and 1.6 miles of floodwall and was constructed at a Federal cost of $548,895.

The local protection at Columbia consists of 1.3 miles of levee with appurtenant drainage structures, an outfall sewer with drainage works, floodgates, and a storm sewer and pumping plant. Federal cost of the project, which was completed in 1941, was $204,740. Total flood damages prevented amount to $4,253,000.

Protection for Bawcomville consists of a loop levee, pumping plant, floodgates, and appurtenant ditches. This construction cost $253,323, of which $168,882 was Federal cost and $84,441 was non-Federal cost. Flood damages prevented by this project total approximately $83,599,000.

Estimated cost of the additional work (extension to Sandy Bayou, etc.) is $8,012,000, of which $7,990,000 is Federal.

Flood damages prevented by the entire Ouachita River and Tributaries project to date amount to about $601,190,000.

JONESVILLE LOCK AND DAM, OUACHITA-BLACK RIVER NAVIGATION PROJECT

BAYOU BARTHOLOMEW AND TRIBUTARIES, ARKANSAS AND LOUISIANA (Vicksburg District)

This stream, originating near Pine Bluff, Arkansas, flows through southeast Arkansas and northeast Louisiana, and empties into the Ouachita River just north of Sterlington, Louisiana. Its drainage area is adjacent to the Boeuf and Tensas Rivers and Bayou Macon Basin, and during high-water stages some interchange of flow between the two basins occurs at several locations.

Features of the original authorization (River and Harbor Act of 1950) provide for channel improvement and closure of the high-water outlets on the main stem of Bayou Bartholomew, enlargement of Deep Bayou, and clearing and enlargement of Overflow Creek.

The Flood Control Act of 1966 amended the original authorization by adding the construction of 10 flood retention lakes in the western tributaries of Bayou Bartholomew in Arkansas and six local levee units along the main stem in Louisiana for flood protection. The channel improvement and six local levee features of the project have been deferred. Also included in the amendment was an authorization for 3,200 acres of land for mitigation of fishery and wildlife losses.

The project purpose is to provide for a reduction of flooding on agricultural lands in Arkansas and Louisiana, improvement in the areas' recreational opportunities, and improvement in fish and wildlife environment.

The Federal cost of the proposed improvements, including that for deferred work is estimated at $2,100,000. Non-Federal cost is $1,380,000. Preconstruction planning and design for this project has been deferred until completion of the Pine Bluff Urban Study, Arkansas. (See Arkansas State pamphlet.)

Flood Plain Information Reports

BLACK BAYOU
(Vicksburg District)

A special flood hazard information report was prepared at the request of HUD, which relates to the flood situation along Black Bayou in West Monroe. Lands affected are residential and commercial. The study and report were completed in November 1973.

MONROE
(Vicksburg District)

A flood plain information report was prepared for the city of Monroe and Ouachita Parish for lands along 31 miles of the Ouachita River in the vicinity of Monroe, and for lands along Youngs Bayou, Chauvin Bayou, and Bayou Lafourche. Lands affected are residential, agricultural, and wooded. The report was completed and published in June 1970 at a cost of $24,933.

WEST MONROE
(Vicksburg District)

A flood plain information report was prepared for the city of West Monroe and Ouachita Parish for lands along 32 miles of the Ouachita River in the vicinity of West Monroe. This study and report directed attention to Ouachita River backwater flooding of residential and presently underdeveloped lands. The report was completed and published in November 1968 at a cost of $11,362.

Flood Insurance Studies

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, the Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Ouachita River Basin are listed below.

	Study Area
Completed:	None
Under way:	Caldwell Parish
	Columbia
	Monroe
	Ouachita Parish
	West Monroe

Surveys Authorized or Under Way

OUACHITA RIVER BASIN
(Vicksburg District)

The study encompasses the entire Ouachita River Basin in Arkansas and Louisiana, an area of 20,000 square miles. This is to be a comprehensive study of all the water resources needs and problems. Water resources needs and problems to be considered consist of: water supply and increased water quality; channel improvements and bank stabilization; additional multiple-purpose dams; navigation and harbor facilities; increased hydroelectric power; protection and propagation of fish and wildlife; and promotion of outdoor recreation through construction of additional facilities. The study was initiated in 1976 and is scheduled for completion in 1981.

TENSAS RIVER BASIN

TENSAS RIVER BASIN

TENSAS RIVER BASIN

Introduction

The Tensas River Basin, located in southeast Arkansas and northeast Louisiana, is an extensive lowland area that lies to the west of the Mississippi River. The upper part of the area begins just above Gould, Arkansas, and extends southward from the Arkansas River to the lower limits of the Red River backwater area in Avoyelles Parish (near Simmesport, Louisiana). The basin consists of two parts, the upper section is affected by headwater flooding from the Boeuf and Tensas Rivers and tributaries, and the lower section is affected by backwater flooding from the Mississippi and Red Rivers. The upper part is relatively narrow at the northern extremity and gradually widens to about 65 miles at the latitude of Vicksburg, Mississippi. Further south, near Sicily Island, Louisiana, the area constricts to a width of about 20 miles then widens somewhat in the lower section east of Catahoula Lake.

The Boeuf and Tensas Rivers and Bayou Macon are contiguous and embrace that part of the alluvial valley of the Mississippi River lying south of the Arkansas River, west of the Mississippi River, north of the Red River backwater area, and east of the Ouachita River and Bayou Bartholomew.

The Red River backwater area extends from the Mississippi River about 40 miles westward to the hills by Catahoula Lake, and from the head of the Atchafalaya Basin Floodway (near Simmesport), and the south bank levee of Red River, about 100 miles northward and upstream on the Ouachita-Black and Tensas Rivers and their tributaries to the limits of backwater overflow, the northernmost limit being in the general latitude of Monroe, Louisiana.

Boeuf and Tensas Rivers and Tributaries Headwater Area

PROJECTS

TENSAS BASIN, BOEUF AND TENSAS RIVERS AND TRIBUTARIES, ARKANSAS AND LOUISIANA (Vicksburg District)

This project is located in the States of Arkansas and Louisiana in the large alluvial flood plain of the Mississippi River south of the Arkansas River and between the Mississippi River on the east and high ground on the west and above the upper limits of the backwater area on the south. The area is protected from Arkansas and Mississippi River floods by the south bank Arkansas River levees and the west bank Mississippi River levees.

The purpose of the project is to provide a high degree of flood protection against headwater floods and to improve recreational opportunities in Lake Chicot in Arkansas (see Arkansas State pamphlet).

WEIR ON BOEUF RIVER

Authorization of the project was from the Flood Control Act of 1944, amended by the Flood Control Act of 1946, 1950, 1958, 1962, 1965, and 1968.

Works of improvement constructed to date in both states include: channel clearing, snagging, realignment, and enlargement. Upon completion of the project, a total of 922,000 acres (including Lake Chicot) will be substantially benefited by the flood protection provided.

Works on the Boeuf and Tensas Rivers and their major tributaries was near completion in the late 1950's when the entire project was reviewed to ascertain if additional work was needed. Recent developments in the basin result in a need for additional channel work.

The estimated total cost of this project is $145,323,000 ($144,900,000 Federal cost) which includes costs for the Lake Chicot Pumping Plant and associated work. Total cost, excluding the pumping plant and other features at Lake Chicot is estimated at $91,000,000. Estimated flood damages prevented by this project to date are $46,623,000.

SMALL PROJECTS

BIG CHOCTAW BAYOU
(Vicksburg District)

This project consists of channel improvements between the mouth of the bayou and Mile 35, to afford an outlet for a system of drainage improvements constructed by local interests. Authorization for the work was by the Flood Control Act of 1948. Federal cost for the project, which was completed in November 1965, was $248,823. Non-Federal interests furnished the rights-of-way and constructed the lower 17.12 miles of the project. Maintenance of the project is the responsibility of the Tensas Parish Police Jury.

GRANTS CANAL (FILLING)
(Vicksburg District)

During the Civil War, General Ulysses S. Grant had his troops excavate a short canal in the town of Lake Providence to allow Union gunboats to bypass Confederate fortifications at Vicksburg by traveling from the Mississippi into Lake Providence and down the Tensas River and crossing over to St. Joseph, Louisiana, on the Mississippi River. In 1953, a remaining segment of the canal was filled at a project cost of $7,070, returning the area to its natural state. This work was accomplished under authority of the Flood Control Acts of 1928 and 1950.

FLOOD PLAIN INFORMATION REPORTS

RAYVILLE
(Vicksburg District)

A flood plain information report is being prepared for the town of Rayville and Richland Parish, Louisiana. The report will provide flood plain information on lands along Burns Bayou and tributaries, Little Creek, and a tributary of Bee Bayou. Residential and agricultural lands are subject to flooding. This report is scheduled for completion in early 1977.

WINNSBORO
(Vicksburg District)

A flood plain information report was to be prepared for the town of Winnsboro and Franklin Parish. The report would have provided flood plain information on lands along Turkey Creek, Ash Slough, and Pine Bayou in the vicinity of Winnsboro. However, in lieu of the flood plain information report, a flood insurance study for the town of Winnsboro and a special flood hazard information report covering the surrounding areas have been initiated. These reports are scheduled for completion in 1978.

FLOOD INSURANCE STUDIES

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, the Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Tensas River Basin, Boeuf and Tensas Rivers and tributaries headwater area, are listed below.

Study Area	
Completed: None	
Under Way:	
Clayton	Tensas Parish
Concordia Parish	Vidalia
Ferriday	Winnsboro
Ridgecrest	

SURVEYS AUTHORIZED OR UNDER WAY

WALNUT-ROUNDAWAY BAYOU
(Vicksburg District)

This study is to determine an economical method of providing flows in the bayou, so that water will be available for irrigation, recreation, industry, municipal, and other uses. The study has not yet been funded.

Red River Backwater Area

PROJECTS

TENSAS BASIN, RED RIVER BACKWATER AREA (Vicksburg District)

Early inhabitants of the Red River backwater area lived and cultivated land along the high ridges, most of which were located near the rivers and streams of the area. Early settlers soon found it necessary to construct levees and other flood control devices to provide protection from intermediate frequency floods. Local and State public funds were later used to subsidize this work.

The Flood Control Act of 1928, which was later amended by the Flood Control Acts of 1941 and 1965, authorized the U. S. Army Corps of Engineers to construct levees and other improvements in the backwater area. This initial and subsequent authorization provides for five major levee projects and several smaller projects.

The purpose of the project is to protect large areas from the effects of backwater flooding from the Mississippi, Red, Ouachita, and Black Rivers. The project provides protection to the area from lesser floods, but these lands must remain subject to use for storage of floodwaters during a Mississippi River Project Flood. A total of 403,000 acres will be substantially benefited by the project.

The five major projects affect the following areas: Tensas-Cocodrie area, Larto Lake to Jonesville area, Sicily Island area, below Red River area, and the Harrisonburg to Little River area (Bushley Bayou).

The Tensas-Cocodrie levee and associated improvements have been completed for a number of years and have been providing flood protection to 373,000 acres of Concordia Parish, located in east-central Louisiana. However, a pumping plant has been authorized for the area to evacuate rainfall from the leveed area sump when the gravity drainage structure is closed. Channel excavation, which is the initial item of construction associated with installation of the pumping plant, is scheduled to begin in fiscal year 1977. Flooding experienced in 1973 necessitated a redesign of levee grades in the Red River backwater area. New levee grades will require enlargement of the Tensas-Cocodrie levee system. This work is scheduled to begin in fiscal year 1977. Existing improvements have prevented flood damages estimated at $31,982,000. Estimated total cost for the Tensas-Cocodrie Pumping Plant and associated works is $34,955,000.

Levees and associated improvements, which are currently under construction, will protect 104,300 acres within the Larto Lake to Jonesville area (located north of the Catahoula Lake Diversion Canal). This work is scheduled for completion in fiscal year 1977. Water resource improvements for the area just south of the diversion canal are still in the planning stage.

In the Harrisonburg to Little River area (northwest of Jonesville, Louisiana), a levee on the west bank of the Ouachita River was constructed to an interim grade in 1960. This levee work consisted of 14 segments constructed between reaches of high ground over a total length of about 15 miles. The levee and interior drainage ditches provide only partial protection to the area from intermediate headwater floods on the Ouachita River. Total cost of the work amounted to $329,282. Due to the continuing flood problems in this area, another project (Bushley Bayou) was authorized for detailed planning under the Water Resources Development Act of 1974 (Public Law 93-251). Thus, work completed in this area will become a part of the Bushley Bayou project. Authorized improvements for the Bushley Bayou project consist of a 1,500-cubic-feet-per-second pumping plant combined with a gravity drainage structure, floodgate, and channel

improvements. Fish and wildlife mitigation features consist of a weir, water management control structures, a 50-cubic-feet-per-second pumping plant, and acquisition of 3,000 acres of woodlands. Estimated costs for the Bushley Bayou project are $23,600,000. The major concern with the authorized plan is that its installation would raise flood stages in unprotected upstream areas along the Ouachita River. For this reason, alternatives are being considered that would provide protection to portions of the Bushley Bayou area without adversely affecting stages in other areas. Planning is concerned with developing a project which would be acceptable to local and environmental interests and which would meet the objectives of national policy.

Levees and other works of improvement for the Sicily Island area (east of Harrisonburg) and the below Red River area (east of Marksville and north and west of Simmesport, below Red River) are authorized for various stages of planning. Plans will be developed which will be acceptable to local and environmental interests and meet the objectives of national policy.

The total estimated cost for the Red River backwater project, excluding the Bushley Bayou project, is $126,555,000.

JONESVILLE
(Vicksburg District)

The town of Jonesville, Louisiana, in Catahoula Parish, is located at the hub of the Red River backwater area. Jonesville is located at the junction of Little and Black Rivers, near the confluence of the Ouachita, Tensas, and Little Rivers which form the Black River. Protection of the town from frequent floods was a matter of great concern to its residents and procedures leading to Federal participation in building flood protection works were initiated. Authorization for the Jonesville project was provided by the Flood Control Acts of 1936 and 1950. The project consists of levees, floodwalls, two surface drainage structures, a storm sewer, a storm drainage pumping plant, and an outlet ditch.

The project provides flood protection to the town from headwater floods on the Ouachita-Black Rivers and backwater flooding from the Mississippi and Red Rivers.

Completed in October 1952, the total costs of the improvements at Jonesville were $645,900, including $100,000 contributed by local interests.

Estimated flood damages prevented by this project to date are $6,683,000.

FLOOD PLAIN INFORMATION REPORTS

CONCORDIA PARISH
(Vicksburg District)

A special flood hazard information report was prepared for Concordia Parish at the request of numerous Federal, State, and local agencies. The parish is affected by floodwaters of the Mississippi River, Red River, and their tributaries, and is comprised largely of the Tensas-Cocodrie area (often referred to as the Red River backwater area). Flooding occurs primarily on residential and agricultural lands. The study and report were completed in July 1973.

SURVEYS AUTHORIZED OR UNDER WAY

LARTO LAKE-SALINE LAKE
(Vicksburg District)

This study is to determine the feasibility of developing a comprehensive plan for the management and preservation of water and related land resources of the Larto Lake-Saline Lake area. The study has not yet been funded.

RED RIVER BASIN

RED RIVER BASIN

RED RIVER BASIN

Introduction

The Red River Basin in Louisiana above Alexandria, with its varied improvements for flood control, bank stabilization, and navigation, constitutes one of the best potential areas for future regional development. Many improvements have already been completed and many more are authorized and contemplated. A comprehensive basin study has been made and it is certain that in time the optimum development of the basin can be accomplished, thereby providing substantial improvement to the environment and essential impetus to the general economy of the entire region. Features completed and authorized are described in the following pages.

Projects

ARMISTEAD BANK PROTECTION
(New Orleans District)

In order to prevent further caving of the right bank of Red River above the Armistead-Coushatta highway bridge across Red River, a standard board revetment was constructed above the bridge in 1951 and extended upstream in 1952 and in 1954 at a total cost of $380,289. Accomplished under the provisions of Section 14 of the Flood Control Act of 1946, this project protects about 4,800 linear feet of bank. Maintenance of the completed improvements is the responsibility of the Red River-Bayou Pierre Levee and Drainage District.

BAYOU NICHOLAS AND COUSHATTA
(New Orleans District)

The improvement consists of a ring levee for the protection of Coushatta. The levee extends from the hills to the high bank along Red River about one-half mile upstream from the U. S. Highway 84 bridge. A second levee commences about one-half mile below the bridge and continues downstream along the river for 0.5 mile and then easterly to the Kansas City Southern Railway tracks.

Outlet for the local drainage is through a gated culvert in each levee. This project was authorized under Section 205, Flood Control Act of 1948. Completed in June 1964, the project cost the Federal Government $70,700. Maintenance of the completed improvements is the responsibility of the town of Coushatta.

BAYOU RAPIDES
(New Orleans District)

This project, authorized under Section 205 of the Flood Control Act of 1948, consists of 22.6 miles of snagging and clearing and chemical treatment of the stumps. Work was completed in December 1951

at a cost of $95,179. Cumulative benefits from flood damage prevented through June 1976 are estimated at $197,000. Maintenance is the responsibility of the Red River, Atchafalaya, and Bayou Boeuf Levee District.

BLACK BAYOU-PINE ISLAND AREA
(New Orleans District)

Authorized under Section 205 of the Flood Control Act of 1948, this project consists of about 7 miles of levees along the right bank of Black Bayou and a drainage structure for discharge of interior runoff. The project provides protection for the Pine Island oil field against floods on Twelvemile and Black Bayous having a frequency of about once in 25 years. The project was completed in July 1963 at an estimated Federal cost of $336,063. Maintenance of the completed project is the responsibility of the Caddo Levee District. Cumulative benefits attributable to the project through June 1976 are $1,750,000.

A crevasse approximately 1,500 feet above the levee's downstream terminus occurred during heavy rains in April 1966, resulting in flooding of a large portion of the oil field which it protects. The crevasse occurred without warning and no preventive work could be accomplished. The levee was repaired at a cost of about $28,000.

BRUSH BAYOU
(New Orleans District)

Under the authority of Section 205 of the Flood Control Act of 1948, as amended, a plan has been developed for channel enlargement and realignment of this stream between Mile 1.20 and Mile 7.42, in combination with nonstructural measures for flood plain management. Construction of the project was initiated in November 1976 and is scheduled for completion in 1978. The Federal cost of the project is $1,000,000 and the non-Federal cost is $2,020,000.

COLFAX, GRANT PARISH
(New Orleans District)

The Colfax Cutoff was made to stop caving banks along Red River and protect the town of Colfax. This emergency channel improvement was completed in 1936 at a cost of $148,282 and was enlarged in 1939 at a cost of $70,348.

COUSHATTA BANK PROTECTION
(New Orleans District)

The north approach to the Armistead-Coushatta highway bridge is protected by 1,136 linear feet of standard board revetment on the left bank of Red River. Constructed in 1950 under Section 14, Flood Control Act of 1946, this improvement cost $90,276, with local interests contributing $40,276 and the Federal Government contributing $50,000.

CYPRESS BAYOU AND WATERWAY BETWEEN JEFFERSON, TEXAS, AND SHREVEPORT, LOUISIANA
(New Orleans District)

This project provides for removing obstructions, dredging, and straightening the channel from Jefferson, Texas, to Shreveport, Louisiana, a distance of 66 miles; and the construction of a dam, without a lock, at the foot of Caddo Lake. The project was completed in 1914 at a cost of $202,817. A new dam has been built to replace the original one (see Caddo Lake, Replacement of Dam, page 65).

Privately owned except for Caddo Lake State Park, the 170-mile shoreline of Cypress Bayou offers excellent recreational opportunities. Commercial camps operating along the shoreline provide cabins, boats, fishing, hunting, and other recreational facilities. Owners of hundreds of homes and private camps also take advantage of recreational opportunities along the waterway.

Visitors to the waterway number from 500,000 to 1,000,000 annually. Variation is due to heavy aquatic vegetation which is especially bad in

low-water years, sometimes completely covering large areas of Caddo Lake. The 26,800-acre lake and Cypress Bayou below Jefferson have an average depth of 4.8 feet. Average annual traffic on the waterway from 1969-1973 was 109 tons, all of which was above the dam; no commerce has been reported since 1973.

The project was also modified by the River and Harbor Act of 1968, to become part of the Red River Waterway project (see page 75).

CADDO LAKE, REPLACEMENT OF DAM
(New Orleans District)

Replacement of the existing dam was authorized by the Flood Control Act of October 1965. The new dam, located immediately downstream of the existing structure, has the same flow characteristics as the existing dam.

Continued existence of Caddo Lake which is used for municipal and industrial water supply and recreation is now ensured. Completed in June 1971, the dam consists of 2,400 linear feet of concrete wall, with the central 860 feet of crest at elevation 168.5 feet mean sea level and the remaining 1,540 feet at 170.5 feet mean sea level. An earth embankment 1,200 feet long ties the concrete dam to the hill line at one end; at the opposite end, the concrete dam abuts the hill line.

The Federal cost of the project as of 30 June 1976 was $3,586,000. The non-Federal cost was $28,000. The Water Resources Development Act of 1976 transferred the operation and maintenance of the dam from a local to a Federal responsibility.

FIRE POINT, CUTOFF AND REVETMENT
(New Orleans District)

This emergency channel improvement project in Caddo Parish near Benton was completed in 1936 at a cost of $124,178. The construction of 1,650 linear feet of board revetment at this location was completed in 1950 at a cost of $104,632.

GAHAGAN BEND
(New Orleans District)

Bank protection works under this project consist of three pile dikes in Red River near the town of Gahagan to protect the flood control levee and avoid relocating a paved highway and main-line railroad. The original work (done under the provisions of Section 14 of the Flood Control Act of 1946) was completed in 1948 and strengthened in 1951 at a cost of $201,966. It protects approximately 2,700 linear feet of bank.

LUCAS BEND
(New Orleans District)

Bank protection works on Red River under this project consist of articulated concrete mattresses, 4- by 4-foot steel fascine boxes placed on dredged sand fill, and pile dikes at Lucas Bend about 9 miles below the city of Shreveport. Authorized under Section 14 of the Flood Control Act of 1948, this project protects the flood control levee and makes unnecessary the relocation of the main line of the Texas and Pacific Railroad, a paved highway, and a 12-inch gas pipeline. Approximately 4,750 linear feet of bank have been protected at a cost of $641,676.

MONCLA BRIDGE
(New Orleans District)

Protection for the left bank approach to the Louisiana State Highway 107 bridge over Red River at the town of Moncla is provided by 1,900 linear feet of standard board revetment. This bank protection work was completed in 1953 (under the provision of Section 14 of the Flood Control Act of 1946) at a cost of $117,671. The Federal Government contributed $50,000 and local interests contributed the balance.

OVERTON-RED RIVER WATERWAY
(New Orleans District)

This project was authorized in 1946 as a modification of the project "Red River Below Fulton, Arkansas," described on page 75. Under this modification a 9- by 100-foot navigation channel was to be constructed from the Mississippi River via Old and Red Rivers, for a distance of 31 miles, and then through a new land cut generally following existing streams along the right bank of the Red River flood plain to a turning basin on Bayou Pierre at Shreveport. The project, which is about 205 miles long, would have nine locks, a pumping plant, and numerous control structures.

Surveys and preliminary studies were suspended in 1961 because local interests would not agree to provide local cooperation for the project. The Louisiana constitution was amended in 1965 to authorize formation of the Red River Waterway District. This district furnished an acceptable act of assurance of local cooperation for the lower 31 miles of the waterway in October 1967. Planning was resumed in 1965 on that part of the project.

Construction of the project, with channel dimensions of 9 by 200 feet, was initiated in June 1968. Authorization of the Red River Waterway project eliminated the need for the Overton-Red River Waterway above Mile 31. For this reason, that portion above Mile 31 was placed in an inactive status. See "Red River Waterway, Louisiana, Arkansas, Oklahoma, and Texas," page 75. Estimated Federal cost (30 June 1976) of construction of the lower 31 miles of the project is $21,200,000, of which $8,400,000 has been allotted. The non-Federal cost is $83,000. Construction of the lower 31 miles is scheduled for completion in December 1980.

RED RIVER BELOW DENISON DAM, TEXAS, OKLAHOMA, ARKANSAS, AND LOUISIANA
(New Orleans and Tulsa Districts)

A comprehensive plan for flood control in the Red River Valley below Denison Dam was authorized by the Flood Control Act of 1946 and subsequent modifications. The plan provides for the construction of Boswell, Hugo, Pine Creek, Lukfata, and Broken Bow Reservoirs in Oklahoma; Millwood, DeQueen, Gillham, and Dierks Reservoirs in Arkansas; and Cooper Lake, Wright Patman Lake, and Lake O' the Pines in Texas.

The project also includes enlarging and strengthening the Red River levee system; constructing channel stabilization and bank protective works where levee setbacks are impossible or uneconomical; constructing several local protection projects; and incorporating several previously authorized projects into the comprehensive plan.

This project has been modified by the Red River Waterway project authorized by the River and Harbor Act of 1968, page 75. Because of the wide scope of the project, its various features are treated as separate projects, as listed in the table on page 67. Projects in Louisiana are discussed individually below.

ALOHA-RIGOLETTE AREA, GRANT AND RAPIDES PARISHES
(New Orleans District)

"Aloha-Rigolette Area, Grant and Rapides Parishes" is a flood control project authorized in 1941 as an extension of the previously authorized and completed project, "Grant Parish Below Colfax." These improvements are designed to prevent flooding of Colfax and fertile alluvial agricultural lands lying along the left bank of the Red River. Interior drainage improvements were also made.

Included in the project are enlargement of 9.2 miles of levee; construction of 12.1 miles of new levee, including closure of Bayou Darrow, to extend the levee to the hills on the left bank of Bayou Rigolette; a floodgate in Bayou Rigolette; diversion of Bayou Darrow to Saline Bayou; approximately 31 miles of snagging and clearing in Bayou Rigolette, and Saline, Walden, and Dry Bayous; and the separation of the Bayou Darrow and Bayou Rigolette drainage areas by closure of the head of Bayou Darrow and adjacent sloughs.

After completion of the levee system below

Feature	Status
New Projects	
Days Creek and Tributaries, Arkansas and Texas	Authorized for Phase I AE&D planning, see Arkansas pamphlet
DeQueen Reservoir, Arkansas	See Arkansas pamphlet
Dierks Reservoir, Arkansas	See Arkansas pamphlet
Garland City, Arkansas	See Arkansas pamphlet
Gillham Reservoir, Arkansas	See Arkansas pamphlet
Maniece Bayou, Arkansas	See Arkansas pamphlet
McKinney Bayou, Arkansas and Texas	Authorized for construction, see Arkansas pamphlet
Millwood Reservoir, Arkansas	See Arkansas pamphlet
Walnut Bayou, Arkansas	See Arkansas pamphlet
Boswell Reservoir, Oklahoma	See Oklahoma pamphlet
Broken Bow Reservoir, Oklahoma	See Oklahoma pamphlet
Brown Creek, Oklahoma	See Oklahoma pamphlet
Hugo Reservoir, Oklahoma	See Oklahoma pamphlet
Lukfata Reservoir, Oklahoma	See Oklahoma pamphlet
Pine Creek Reservoir, Oklahoma	See Oklahoma pamphlet
Cooper Lake and Channels, Texas	See Texas pamphlet
Lake O' The Pines, Texas	See Texas pamphlet
Wright Patman Dam and Lake, Texas	See Texas pamphlet
Posten Bayou, Arkansas	See Arkansas pamphlet
Caddo Dam Replacement, Louisiana	Completed
Red River Levees and Bank Stabilization, Texas, Arkansas, and Louisiana	Under way
Campti-Clarence Area, Louisiana	Completed
East Point, Louisiana	Completed
West Agurs Levee, Louisiana	Authorized for construction
Incorporated Projects	
Hempstead County Levee District No. 1, Arkansas	See Arkansas pamphlet
Bayou Bodcau and Tributaries, Louisiana	Authorized
Aloha-Rigolette Area, Grant and Rapides Parishes, Louisiana	Completed
Bayou Bodcau, Red Chute, and Loggy Bayou, Louisiana	Completed
Bodcau Lake, Louisiana	Completed
Bayou Pierre in vicinity of Shreveport, Louisiana	Completed
Bayou Pierre, Louisiana	Completed
Colfax, Grant Parish, Louisiana	Completed
Grant Parish Below Colfax, Louisiana	Completed
Natchitoches Parish, Louisiana	Completed
Pineville, Louisiana	Completed
Red River in vicinity of Shreveport, Louisiana	Completed
Red River Parish, Louisiana	Completed
Saline Point, Louisiana	Completed
Wallace Lake, Louisiana	Completed

Note: The benefits accumulated to date for the completed and partially completed features of this project are shown elsewhere in this pamphlet and in similar pamphlets for the States of Arkansas, Oklahoma, and Texas.

Bayou Darrow, the most severe flood experienced was that of May 1953. Although heavy rainfall flooded a large part of the area, about 5,600 acres were protected from Red River overflow. About 41,600 acres and 36,300 acres were protected from Red River overflow during the floods of April-June 1957 and May 1958, respectively.

The entire project was completed in 1956 at a total Federal cost of $1,653,237. Benefits from this project are inseparable from those of the companion project, "Grant Parish Below Colfax," since each provides partial protection for the same area. Cumulative benefits from the prevention of floods for the two projects (through June 1976) are $2,591,000. The project is maintained by the 19th Louisiana Levee District in Grant Parish and the Red River, Atchafalaya, and Bayou Boeuf Levee District in Rapides Parish.

BAYOU BODCAU AND TRIBUTARIES (New Orleans District)

Bayou Bodcau drains 1,158 square miles in southwestern Arkansas and northwestern Louisiana. It rises in the vicinity of Hope, Arkansas, flows southerly through Bodcau Lake to join Cypress Bayou and form Red Chute Bayou. The flow continues through Red Chute Bayou, Flat River, and Loggy Bayou, and enters Red River from the left bank about 50 miles below Shreveport. The protection authorized by the Flood Control Act of October 1965 consists of levees and channel improvement which would afford protection against a 25-year headwater flood and a backwater flood resulting from a recurrence of the 1945 flood on Red River under 1962 reservoir conditions. The project will benefit an estimated 20,710 acres of fertile Red River agricultural lands.

The project will include extension of the existing levee along Cypress Bayou, in a southerly direction to the junction of Cross Bayou and Red Chute Bayou and thence parallel to the west descending bank of Red Chute to a point located just above Cutoff Bayou, a total distance of approximately 25 miles. Approximately 5 miles of levee on the east descending bank of Red Chute will also be constructed. Of the levee to be constructed on the west descending bank, approximately 8 miles are in place.

A levee will also be constructed extending about 32.1 miles from the lower end of the existing Red River levee in the vicinity of Ninock, southward along the Red River then northward along the right descending bank of Loggy Bayou, approximately 1 mile above its mouth, thence along the right banks of Loggy Bayou, Flat River, Red Chute, and Cutoff Bayous, and tie into the existing Red River levee near Taylortown.

Flat River channel will be enlarged from Cutoff Bayou to Cooper Bayou, a distance of 11.6 miles. Landside drainage, sump areas, drainage structures, relocations of pipelines and utilities, and modification of bridges would be required in connection with the work.

Estimated cost of the project (30 June 1976) is $14,500,000 Federal and $3,400,000 non-Federal. Construction began in August 1974 and is scheduled for completion in 1980.

BAYOU BODCAU, RED CHUTE, AND LOGGY BAYOU (New Orleans District)

Located downstream of Bodcau Dam about 25 miles southeast of Shreveport, this project consists of channel improvement for flood control.

Improvement of the lower 7.8 miles of the channel, consisting of 2.4 miles of snagging and clearing and 5.4 miles of channel enlargement, was completed in 1948 at a Federal cost of $319,200. A modification of this project, "Bayou Bodcau and Tributaries," is also described hereinbefore.

During the flood of May 1958, stages at the U. S. Highway 80 gage, just northeast of Shreveport, were estimated to have been reduced by 2.6 feet, and flooding on 9,100 acres of cropland was prevented because of this project. Estimated benefits cumulative through June 1976 are $389,000. The Bossier Levee District maintains the project.

BAYOU PIERRE (New Orleans District)

This 30-mile channel improvement project for

flood control extends from Bayou Wincey to the mouth of Bayou Pierre. It was completed in 1939 at a cost of $299,529. Cumulative benefits through June 1976 are estimated at $921,000. The improvement is operated and maintained by the Red River-Bayou Pierre Levee and Drainage District.

BAYOU PIERRE, VICINITY OF SHREVEPORT (New Orleans District)

Drainage for parts of south Shreveport and the agricultural lands below the city is provided by this project. The channel enlargement and snagging and clearing involved 21 miles of channel in and below Shreveport to the mouth of Cypress Bayou. Completed in 1950, the cost was $332,383, of which $89,047 was contributed by local interests.

Stages for the flood of April 1953, the largest since completion of the improvements, were reduced an estimated 2.5 feet. About 290 acres within Shreveport and about 4,800 acres downstream of the city were protected from overflow. Project benefits cumulative through June 1976 are an estimated $1,935,000.

Within the city limits, the channel improvement is maintained by the city of Shreveport, while the remainder of the improvements are maintained by the Caddo Parish Police Jury. Portions of the bayou in Caddo Parish have been enlarged by the Police Jury, in cooperation with the State of Louisiana, Department of Transportation and Development, Office of Public Works.

BODCAU LAKE, ARKANSAS-LOUISIANA (New Orleans District)

Bodcau Lake is located in Webster and Bossier Parishes, Louisiana, and Lafayette County, Arkansas. This is a single-purpose flood control reservoir, and there is no permanent pool. The dam is an 11,900-foot-long rolled-earth fill with twin uncontrolled conduits 10 feet in diameter and a 4,000-foot uncontrolled spillway.

The top of the flood pool is at elevation 199.5 feet mean sea level. For flood control storage, the reservoir has a capacity of 357,300 acre-feet which will cover 21,000 acres. Seventy-two thousand acres of fertile bottomland including parts of Barksdale Air Force Base and Bossier City are protected by the reservoir.

During the flood of May 1958, stages at the U. S. Highway 80 gage were reduced by an estimated 2.9 feet and flooding was prevented on 9,900 acres of cropland. Estimated cumulative flood damages of $475,000 have been prevented by this project as of 30 June 1976.

Recreational development has spurred visitation to the reservoir from an estimated 8,000 people in 1955 to approximately 345,000 in 1975. Facilities for picnicking, camping, boat launching, rest rooms, and sanitary and water supply systems have been provided by the U. S. Army Corps of Engineers at a cost of about $132,000 through June 1974. No additional funds have been allocated to date.

Waterfowl and upland game hunting areas have been developed by the Louisiana Wild Life and Fisheries Commission, through license agreement with the Secretary of the Army. Hunting and fishing in the area have been improved through a supervised game management program and releases of fish and game stock.

A 500-acre subimpoundment, Ivan Lake, has been constructed on an arm of Bodcau Lake just north of State Highway 160 by the Bossier Parish Police Jury under license agreement and in cooperation with the State of Louisiana, Department of Transportation and Development, Office of Public Works. The feature includes recreational development of 1,110 acres surrounding the reservoir.

Construction was initiated in 1947 and essentially completed in 1961 with the exception of recreational facilities. The total project cost is $4,232,000 including $132,000 for recreational facilities.

CAMPTI-CLARENCE LEVEE (New Orleans District)

Flood protection for 29,500 acres of land and improvements on the left descending bank of Red River below Campti is provided by this levee. Works consist of 30 miles of ring levee to protect the area

MAJOR URBAN CENTERS

SHREVEPORT, LOUISIANA

ALONG RED RIVER

ALEXANDRIA, LOUISIANA

from Red River and Saline Bayou overflow, and construction of interior drainage improvements to alleviate the local interior flood problem. Construction of the project was initiated in September 1964 and completed in August 1968. Total cost of the project was $2,053,000, which includes $480,000 non-Federal costs.

EAST POINT LEVEE
(New Orleans District)

This project consists of approximately 13 miles of levee along the left bank of Loggy Bayou and Red River with appurtenant drainage works, including a control structure at Coushatta Bayou. About 9,000 acres of Red River bottomlands near Coushatta are protected. Construction was initiated in January 1966 and completed in August 1968. Total cost was $553,100, including $67,000 local cost.

GRANT PARISH BELOW COLFAX
(New Orleans District)

The Grant Parish below Colfax project was designed to provide increased flood protection to the town of Colfax and vicinity. The improvement consists of an extension of the levee system along the left bank of Red River from the town of Colfax to the west bank of Bayou Darrow, a distance of about 16 miles.

Without the levee, completed in 1941 at a cost of $38,809, Colfax would have been flooded to an estimated depth of 5 feet in April 1945.

The levee extension has since been enlarged and extended by a companion project, "Aloha-Rigolette Area, Grant and Rapides Parishes." This companion project was completed in 1956.

Since both projects provide partial protection to the same area, benefits from the two projects are inseparable. Cumulative benefits from the prevention of floods for the two projects through June 1976 are $2,591,000.

NATCHITOCHES PARISH
(New Orleans District)

Approximately 135,000 acres in the Cane River "Island" area are protected from Red River overflow by this project. Work was completed in 1956 at a cost of $1,780,000, of which $250,000 was contributed by local interests.

The project consists of 34.4 miles of levee along the right bank of Red River extending from the vicinity of Natchitoches to Cane River and then along and across Cane River to the hills on the south bank; a diversion channel, about 4.3 miles long, extending from Cane River through the hills to Red Bayou; the widening of 1.2 miles of Red Bayou channel to Red River; and rearrangement of the interior drainage.

An estimated 57,000 acres was protected during the flood of May 1942. The levee system saved portions of the town of Natchitoches from flooding in April 1945 even though practically all of the Cane River "Island" area was inundated.

Flooding occurred over approximately 72,000 acres in the Cane River, Kisatchie Bayou, and Old River area during May 1953. However, the levee protected an additional 40,000 acres from Red River overflow. Sixty-six thousand acres were protected from flooding during both April-June 1957 and May 1958.

Cumulative benefits (through June 1976) from this project are estimated at $4,226,000. Maintenance on the project is the responsibility of the Cane River Levee District.

PINEVILLE
(New Orleans District)

The Pineville project is designed to protect the city of Pineville and vicinity against floodwaters of the Red River. Improvements authorized in 1941 consist of about 1.14 miles of levee, the raising and widening of 1,240 feet of railroad embankment, four drainage structures, and a pumping station.

The major portions of this work were completed in 1951 at a cost of $232,426.

During the flood of May 1953, approximately 130 acres in the area were protected by the levee system. Cumulative flood damages prevented by the project through June 1974 are estimated at $37,000. Maintenance of the project, including operation of the four drainage structures and the pumping station,

is the responsibility of the Red River, Atchafalaya, and Bayou Boeuf Levee District.

POSTEN BAYOU, ARKANSAS AND LOUISIANA (New Orleans District)

A project for the Posten Bayou, Arkansas and Louisiana area, was authorized by Public Law 218, 84th Congress, approved August 1955. It provided for realignment and enlargement of Posten Bayou below Mile 10 for diversion of tributary flood runoff from an area of about 9,200 acres. Due to opposition from the State of Louisiana, the project was placed in an inactive status.

In a restudy of the problem under the Comprehensive Basin Study of Red River below Denison Dam, an alternative plan for a project lying wholly within the State of Arkansas was developed. An interim report recommending this plan in lieu of the previous plan was completed in March 1968, and the recommended improvements were authorized in December 1970 under Section 201 of the Flood Control Act of 1965. For details see Arkansas pamphlet.

RED RIVER IN VICINITY OF SHREVEPORT (New Orleans District)

Consisting of bank protection works, this project extends intermittently from the lower limits of Bossier City, Mile 304.6, upstream to Mile 315.0. This effort to stabilize the Red River channel and prevent excessive bank caving includes works at Brownlee Bend, Honore Bend, and Bossier City front on the left bank and Twelvemile Bayou Bend, Douglas Island Bend, and Shreveport front on the right bank.

Features of the project protect about 58,000 linear feet of Red River banks and include 31,000 feet of board revetment, 6,800 feet of pile dike, 5,300 feet of rock groins, 19,780 feet of fascine boxes, 9,930 feet of pile revetment, and 470 feet of baffle dikes.

Costs for the project, completed in 1953, were $3,908,000. Through June 1976 the project has prevented an estimated total of $1,965,000 in cumulative flood damages. The project is maintained by the Caddo and Bossier Levee Districts, each of which maintains the work within its own District.

RED RIVER LEVEES AND BANK STABILIZATION BELOW DENISON DAM, TEXAS, OKLAHOMA, ARKANSAS, AND LOUISIANA (New Orleans and Tulsa Districts)

Works under this project, which consist of raising and strengthening the existing and authorized levees of Red River from the vicinity of Index, Arkansas, to Pineville, Louisiana, on the left descending bank and to Boyce, Louisiana, on the right descending bank, will protect against a flood equivalent to that of 1945 if it had been confined by levees. There are approximately 153 miles of levees on the left bank and 240 miles of levees on the right bank in the system. Bank protection and channel stabilization works are constructed in areas where levee relocations are impossible or uneconomical.

In Louisiana approximately 76 miles of levee on the right bank and 27 miles on the left bank have been raised to grade and section. A total of 31.6 miles of bank have been protected and four cutoffs constructed in Louisiana. Authorized in 1946,

BANK STABILIZATION WORK– BOURBEAUX, LOUISIANA

this project will cost an estimated $48,700,000 in Federal funds of which $31,277,000 is the cost through June 1976. The project is scheduled for completion in 1978. Cumulative benefits through June 1976 are estimated at $2,258,000. The completed portions of the project are maintained by local interests.

RED RIVER PARISH
(New Orleans District)

About 176,000 acres of land in the Bayou Pierre Basin along Red River are protected by this project. Completed in 1940, at a cost of $149,435, the improvements included 31.0 miles of new levees and levee enlargement along the south bank of Red River in Red River Parish.

Although the levee was breached during the flood of 1945, 20,000 acres were still protected from floodwaters. The levees protected about 29,000 acres of land during the flood of April-June 1957 and about 31,000 acres during the flood of May 1958.

Cumulative benefits for this project through June 1976 are estimated at $1,706,000. The project is maintained by the Red River-Bayou Pierre Levee District.

SALINE POINT
(New Orleans District)

Designed to reduce flood stages by increasing the efficiency of the channel, this project consists of two cutoffs on Red River. Completed in 1942 at a cost of $124,100, the Saline and Double Eddy Cutoffs connected Mile 65.5 to Mile 54.0 (1938 mileage). Necessary levee setbacks were also included in the project.

The improvements have significantly reduced flood stages in the area and benefits, cumulative through June 1976, are estimated at $65,000.

WALLACE LAKE
(New Orleans District)

Wallace Lake, located on Cypress Bayou below Shreveport, provides protection from floodwaters to about 90,000 acres of agricultural lands in Caddo and DeSoto Parishes. The original project was authorized by the Flood Control Act of June 1936, as amended by the Act of June 1938.

Construction was initiated in 1941 and completed in 1946 at a total project cost of $1,219,371, including $17,164 for recreational facilities.

The dam, which is located 14 miles southeast of Shreveport and rises to a maximum of 48 feet above the valley floor, is comprised of an earth fill 4,300 feet long, a reinforced-concrete overflow spillway 644 feet in length, with crest at elevation 158 feet above mean sea level, and outlet works. The outlet works, consisting of four rectangular conduits, each 8.25 feet wide and 3 feet high, with invert at 140 feet above mean sea level, are integral with the spillway. The lake controls the runoff from 260 square miles of the Cypress Bayou watershed.

The total storage capacity of the lake is 96,100 acre-feet, of which 7,800 acre-feet is for conservation and 88,300 acre-feet is for flood control. The surface area of the lake is 2,300 acres at conservation pool, elevation 142 feet mean sea level; and 9,300 acres at flood pool, elevation 158 feet mean sea level.

The project has prevented an estimated $1,067,000 in flood damages, cumulative through June 1976.

Wallace Lake is one of the recreation spots of the Shreveport area. The conservation pool of the lake provides recreation opportunities in fishing and hunting. Improved access roads to the lake have been constructed. On peak days, as many as 150 boats may use the lake, and approximately 40,000 pounds of fish are caught by sportsmen annually. Boats, tackle, bait, and other necessities may be obtained at fishing camps located near the dam. In 1975, an estimated 130,000 persons visited the project for recreational purposes.

A restudy of the existing project on Wallace Lake, Louisiana, has been initiated to determine the advisability of satisfying local requests for additional recreational area and to provide an additional water supply for municipal and industrial areas (see page 81).

WEST AGURS LEVEE
(New Orleans District)

The West Agurs levee, constructed by local interests in 1961, poses a serious flood threat to the area behind the levee due to possible failure from uplift and underseepage during a large flood. The 700 acres of land located behind the levee is a rapidly expanding area of Shreveport, Louisiana. The project, authorized by the Water Resources Development Act of 1976, provides for improvements to reduce this flood threat and incorporation of the West Agurs levee into the Federal project Red River Below Denison Dam. The improvements consist of a series of relief wells the entire length of the landside borrow pit adjacent to the levee.

The cost of the improvements are estimated at $490,000, all of which would be Federal. Preconstruction planning funds are not available.

RED RIVER BELOW FULTON, ARKANSAS
(New Orleans District)

Previous work for the continuing improvement of Red River below Fulton, Arkansas, was first authorized in 1828 and subsequent years through 1890. The existing project was authorized by the River and Harbor Act of 13 July 1892. A 35-mile link between the Ouachita and Black River navigation project and the Mississippi River is included in the project. Features of the project are clearing of banks, snagging, dredging shoals, building levees, closing outlets, revetting caving banks, and preventing injurious cutoffs. No channel dimensions are specified. Although this is a continuing project, it is considered complete.

Except during high river stages which usually are of short duration, depth for navigation on Red River is insufficient above the mouth of Black River. Traffic in the upper river is generally limited to movement of construction equipment and supplies. Average annual traffic from 1971-1975 was 902,484 tons, practically all of which was through traffic from the Black and Atchafalaya Rivers to Mississippi River.

Work under this authorization, exclusive of operation and maintenance, cost $1,963,806. Two later modifications of this project, Overton-Red River Waterway and Red River Waterway, are discussed separately on page 66 and below.

RED RIVER WATERWAY LOUISIANA, ARKANSAS, OKLAHOMA, AND TEXAS
(New Orleans and Tulsa Districts)

The River and Harbor Act of 1968 authorized, among others, the following improvements.

1. As a modification of the project, "Red River Below Fulton, Arkansas, and Louisiana," a plan for navigation on Red River from the Mississippi River to Shreveport consisting of a slack-water channel 9 feet deep and 200 feet wide, in Red River, utilizing five navigation locks and dams.

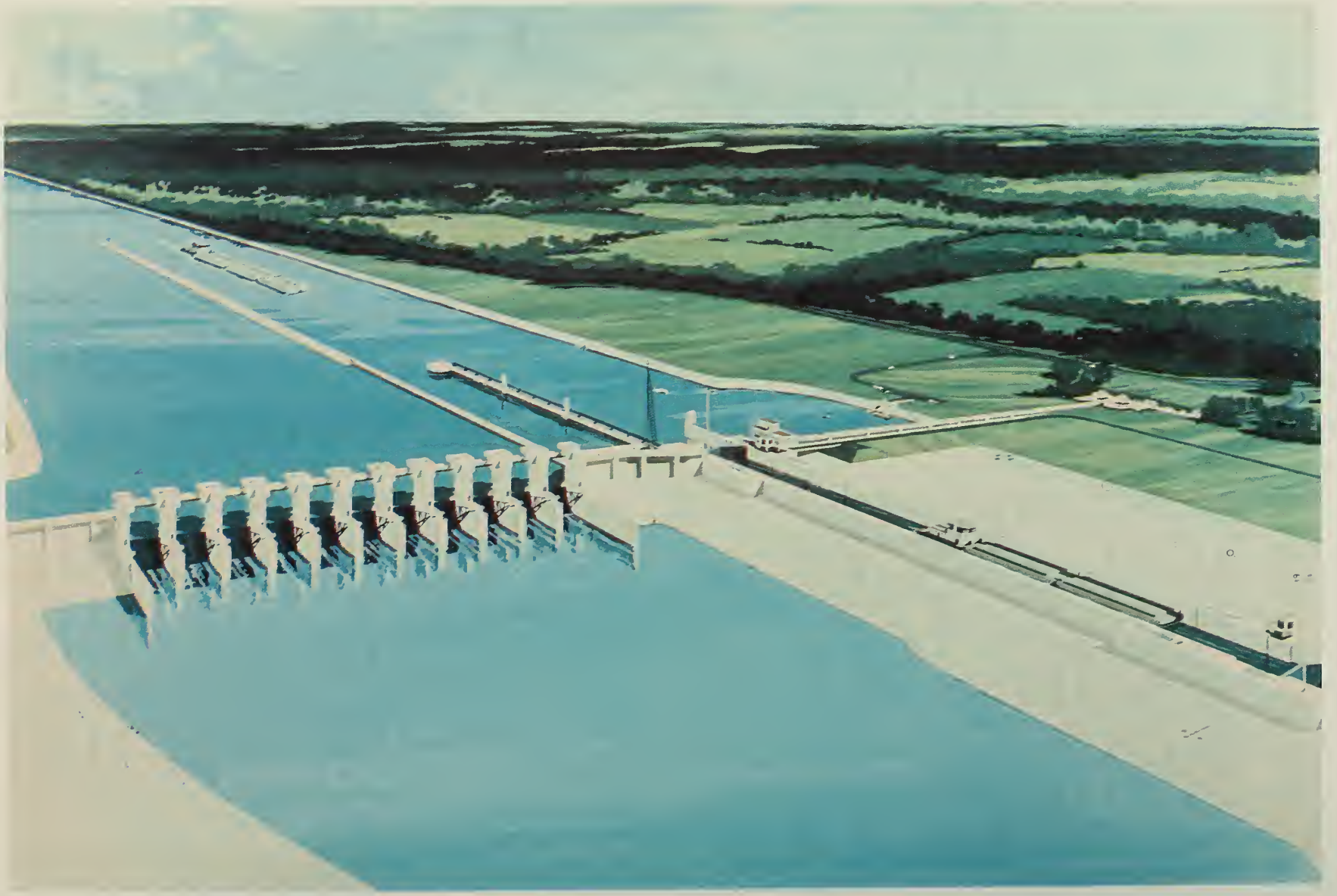
2. As a modification of the project, "Cypress Bayou and Waterway Between Jefferson, Texas, and Shreveport, Louisiana," a plan for navigation on Twelvemile and Cypress Bayous, from Shreveport, Louisiana, to Daingerfield, Texas, consisting of a slack-water channel 9 feet deep and 200 feet wide, utilizing three (two existing) navigation dams and three navigation locks.

3. As a modification of the project, "Red River Levees and Bank Stabilization Below Denison Dam, Texas, Arkansas, and Louisiana," a comprehensive plan for bank stabilization on Red River from Denison Dam to the Mississippi River.

Recreation facilities are included as integral parts of each of the above modifications.

Estimated total cost for the overall project (1 October 1976), which includes work in the Tulsa District, is $1,645,640,600, including $3,540,600 for the Coast Guard and $94,900,000 non-Federal. Estimated cost of works in Louisiana is $1,179,309,000 Federal and $32,680,000 non-Federal.

The works authorized for construction in Louisiana include approximately 240 miles of navigation improvements, 225 miles of channel stabilization works, and various recreational facilities. Preconstruction planning is continuing on the Mississippi River to Shreveport reach of the project. Construction in this reach, initiated in July 1973, has mainly been channel realinement and



ARTIST'S CONCEPTION OF LOCK AND DAM NO. 1—A FEATURE OF THE RED RIVER WATERWAY PROJECT

RED RIVER REALIGNMENT WORK, HADDEN–FT. DERUSSY

RED RIVER REALIGNMENT WORK, CHOCTAW BAYOU BEND

stabilization work; however, work was initiated in 1977 on Lock and Dam No. 1 (see illustration on preceding page) and is currently scheduled for completion in 1985. An economic reanalysis of the Shreveport to Daingerfield, Texas, reach was initiated in September 1974. Preconstruction planning was initiated on the Shreveport to Index reach in 1976.

SHREVES ISLAND CUTOFF
(New Orleans District)

This is an emergency channel improvement project in Bossier Parish near Blenheim which was completed in 1936 at a cost of $85,746.

TWELVEMILE BAYOU
(New Orleans District)

Enlargement of Twelvemile Bayou between Cash Point Floodgates, Mile 9.6, and U. S. Highway 71 bridge, Mile 4.5, and snagging and clearing between U. S. Highway 71 bridge and Red River, were authorized under Section 205, Flood Control Act of 1948, as amended.

Work on this project was initiated in April 1964, and completed in May 1965 at a cost of $335,433. Cumulative benefits from flood damages prevented through June 1976 are estimated at $77,000.

Small Projects

SNAGGING AND CLEARING

Under the authority of Section 2 of the Flood Control Act of 1937 (and subsequent modifications), which is discussed on page xviii of the Introduction, work has been accomplished on the following streams in the Red River Basin:

Stream	Type of Improvement	Length of Improvement miles	Date Completed	Cost
Wallace Bayou	Clearing and snagging	3.2	1951	$11,502
Posten Bayou	Clearing, snagging, and enlargement	10.0	1951	46,021
Brush Bayou	Clearing, snagging, and realignment	4.7	1953	48,317
Cane River	Clearing and snagging	18.6	1960	97,035
Brush Bayou	Clearing, snagging, and enlargement	4.7	1960	49,785

Emergency Projects

EMERGENCY BANK PROTECTION– RED RIVER
(New Orleans and Tulsa Districts)

Authorized bank stabilization works under currently funded projects upstream of the Overton-Red River Waterway (lower 31 miles) project are limited to isolated locations for immediate protection of short segments of levee or other improvements. These isolated efforts do not provide an effective solution to the overall problem of bank caving and channel migration. Accelerated bank loss and channel misalignment in various reaches of the Red River have become critical.

A comprehensive bank stabilization program for these critical reaches is proposed under the Red River Waterway project as authorized by the River and Harbor Act of 1968. An emergency plan to treat major meanders and correct misalignment in these critical reaches in accordance with the comprehensive program was considered necessary and justifiable and was approved in the 1970 Senate hearings. Construction of bank protection works was initiated in 1972 and is currently scheduled for completion in 1982. The estimated Federal cost of the project is $44,700,000 and the non-Federal cost is $460,000. Funds in the amount of $22,883,000 have been allotted through June 1976.

EMERGENCY REPAIRS– PUBLIC LAW 99-84

This law is discussed in the Introduction on page xviii. Levee work in Red River Basin accomplished under this authority is shown in the tabulation on the following page.

EMERGENCY LEVEE REPAIRS--RED RIVER BASIN

No. Setbacks or Repairs	District	Quantity cubic yards	Cost
	Red River		
67	Red River, Atchafalaya and Bayou Boeuf Levee	4,636,968	$1,825,036
2	Red River, Bayous Darrow and Rigolette Levee	333,796	81,600
16	19th Louisiana Levee and Drainage	799,873	279,681
16	Cane River Levee and Drainage	1,303,185	519,448
26	Red River and Bayou Pierre Levee and Drainage	1,242,331	528,354
1	Saline Levee and Drainage	240,881	88,743
13	Bossier Levee	627,659	234,256
8	North Bossier Levee	746,072	160,008
26	Caddo Levee	1,201,752	363,037
1	5th Louisiana Levee	199,426	83,977
3	Campti-Clarence Levee	58,300	57,088
1	Natchitoches Levee and Drainage	15,000	10,000
	Twelvemile Bayou		
1	Caddo Levee	13,414	5,978
	Black Bayou		
2	Caddo Levee	40,466	31,389
	Pine Brush Bayou		
1	19th Louisiana Levee	15,316	6,099

Flood Plain Information Reports

BENOIT BAYOU
(New Orleans District)

A special flood hazard information report for the Bossier City area was completed and published in November 1973.

The study area encompasses the Benoit Bayou watershed. The report was prepared at the request of the Shreveport Area Office of the Federal Housing Administration in an effort to encourage the most efficient use of land for which residential development is being planned. The report indicates that the area is subject to headwater flooding. Information concerning the possible future flooding is presented in the report.

BICKHAM BAYOU
(New Orleans District)

A special flood hazard information report on the area along Bickham Bayou near Shreveport was completed and published in February 1973.

The study area encompasses the Bickham Bayou watershed. The report was prepared at the request of the Shreveport Metropolitan Planning Commission of Caddo Parish in an effort to encourage the most efficient use of land within its jurisdiction and to eliminate flood damages and hazards through well-planned local regulations governing development and use of flood plains. The report indicates that the area is subject to headwater flooding and provides

information on the extent and severity of possible future flooding.

BRUSH BAYOU
(New Orleans District)

A special flood hazard information report for the area along Brush Bayou in the vicinity of Shreveport was completed and published in July 1968.

The study area encompasses the Brush Bayou watershed. The report was prepared at the request of the Shreveport Area Office of the Federal Housing Administration in an effort to reduce the risk to the public, builder, and Federal Housing Administration, and, in addition, to provide information for a basis upon which to approve further developments along Brush Bayou from its intersection with U. S. Highway 171 downstream to Wallace Lake flood control pool. The report indicates that the area is subject to headwater flooding. Information concerning the extent and severity of possible flooding is presented in the report.

SAND BEACH BAYOU
(New Orleans District)

A special flood hazard information report on portions of Bayou Pierre and Sand Beach Bayou in the city of Shreveport and vicinity was completed and published in January 1974.

The report was prepared at the request of the Shreveport Area Office of the Federal Housing Administration, in an effort to encourage the most efficient use of land for which residential development is being planned. The report indicates that the area is subject to headwater flooding and provides information on the extent and severity of possible future flooding.

SHREVEPORT NO. 1
(New Orleans District)

A flood plain information report on McCain Creek and Gilmer Bayou in Shreveport and vicinity was completed and published in January 1971 at a cost of $30,864.

The study area covers McCain Creek beginning at its confluence with Twelvemile Bayou and extending upstream approximately 4.2 miles. The report indicates that this area is subject to a combination of headwater and backwater floods. Backwater flooding has been reduced by Federal flood control projects on the Red River and by Lake O' the Pines Dam and Reservoir on Cypress Creek, a tributary to Twelvemile Bayou. The Red River navigation and bank stabilization project, authorized by the U. S. Congress in the River and Harbor Act of 1968, would reduce flooding on McCain Creek by the lowering of flood stages on Red River and Twelvemile Bayou. The study also covers Gilmer Bayou beginning at its confluence with Boggy Bayou and extending upstream approximately 9 miles. The report revealed that this area is subject to headwater flooding. There are no Federal or State control projects on Gilmer Bayou.

SHREVEPORT NO. 2
(New Orleans District)

A flood plain information report on the Brush Bayou area in the vicinity of Shreveport was completed and published in February 1974 at a cost of $22,000.

The study area encompasses Brush Bayou and tributaries beginning along Brush Bayou at Mile 2 and continuing upstream to Mile 9. The study indicates that the area is subject to headwater flooding. A detailed project report has been completed by the Corps of Engineers and approved by the Office of the Chief of Engineers. The detailed project report is favorable to improvements which would significantly reduce flooding in the area; see page 64.

SHREVEPORT NO. 3
(New Orleans District)

A flood plain information report on the Logan and Choctaw Bayous area in the vicinity of

Shreveport was completed and published in April 1974 at a cost of $27,500.

The study area encompasses Logan Bayou from Mile 0 to Mile 4.5, and Choctaw Bayou from Mile 0 to Mile 7. The report indicates that the area is subject to headwater flooding and provides information on the extent and severity of possible future flooding.

Flood Insurance Studies

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Red River Basin are listed below.

	Study Area
Completed:	None
Under Way:	Alexandria
	Colfax
	Rapides Parish

Surveys Authorized or Under Way

RED RIVER BELOW DENISON DAM, COMPREHENSIVE BASIN STUDY, LOUISIANA, ARKANSAS, OKLAHOMA, AND TEXAS (New Orleans District)

A study was initiated in 1962 under the direction of a coordinating committee chaired by the New Orleans District of the Corps of Engineers. The basic objective of the study was to develop a comprehensive plan for development of the water and related land resources of the basin. Two interim reports were completed prior to completion of the comprehensive study. The first, entitled "Interim Report on Navigation and Bank Stabilization," was submitted for review in March 1966. The second, entitled "Posten Bayou, Arkansas," was submitted in March 1968. The report presenting the overall comprehensive plan was completed and submitted to the Water Resources Council in July 1968. In May 1976, the council forwarded the comprehensive study to the House of Representatives.

Plans developed in the comprehensive report were divided into early action and long-range segments. Each segment of the plan includes a broad spectrum of structural and nonstructural measures. Features of the early action segment are needed now and should be implemented within the next 10 to 15 years. Reports seeking authorization of noncontroversial early action projects have been prepared by New Orleans and Tulsa Districts.

RED RIVER BELOW DENISON DAM; COMPREHENSIVE REPORT– AUTHORIZING REPORT (New Orelans District)

In 1976 work was initiated on two authorizing reports, Bayou Dorcheat, Arkansas, and Cane River Island area, Louisiana.

The Bayou Dorcheat Basin is located primarily in Nevada, Lafayette, and Columbia Counties, Arkansas, and Webster Parish, Louisiana. This study will investigate the problems of meeting present and future water needs in the Bayou Dorcheat Basin, and determine if any improvements for flood control, recreation, municipal and industrial water supply, and allied purposes are warranted at this time. Solutions

to be considered will include singly or in combination, levees, channel improvements, reservoirs, and nonstructural measures. Completion is scheduled for 1979.

The Cane River drainage basin encompasses approximately 733 square miles in Natchitoches, Vernon, and Sabine Parishes, with the greatest portion of the area in Natchitoches Parish. A portion of this drainage basin, known as Cane River Island, has a serious drainage problem. The interior drainage of Cane River Island is discharged into Cane River through gated gravity drainage structures. During periods of high stages on Cane River, the gates must be closed to prevent backwater flooding; consequently, flooding due to impoundment of local runoff results. Solutions to be considered involve singly or in combination, channel improvements, pumping stations, floodgate modifications, and nonstructural measures. The study is scheduled for completion in 1979.

ALOHA-RIGOLETTE (RED RIVER) AREA, LOUISIANA
(New Orleans District)

This study is to review the report on the Red River and Tributaries, Texas, Oklahoma, Arkansas, and Louisiana, downstream from Denison Dam, and subsequent reports with a view toward determining the advisability of providing additional flood protection in the Aloha-Rigolette area. The study has not yet been funded.

WALLACE LAKE, LOUISIANA
(New Orleans District)

A study is under way to determine the advisability of reformulating the existing flood control project to satisfy local requests for additional recreational area and to provide an additional water supply for municipal and industrial areas. Under this study preliminary evaluations indicated that the water supply and recreation demands projected for the study area can be better met by the existing and potential development at Caddo Lake without modification of the Wallace Lake project. No further studies are scheduled at this time.

PEARL RIVER BASIN

PEARL RIVER BASIN

PEARL RIVER BASIN

Introduction

The basin is located in the eastern part of Louisiana bounded by the State of Mississippi on the north and east and the Lake Pontchartrain Basin on the south and west. Improvements in the basin have been authorized for the purposes of navigation and associated uses. In recent years, commercial traffic in the basin has decreased and improvements are mainly used for recreational purposes. The two navigation projects located in the basin are described below.

Projects

PEARL RIVER
(Mobile District)

Under one of the Corps special authorizations, Section 3 of Public Law 14, 79th Congress (page xviii of the Introduction), a 150-foot-wide channel was snagged and cleared in the 65-mile reach between Bogalusa, Louisiana, and Columbia, Mississippi, for small boat navigation. Work on the project was carried out in 1968, 1969, and 1970 at a cost of $279,000, including $64,000 contributed by local interests. For information on the waterway below Bogalusa, a project specifically authorized by Congress, see the following writeup.

PEARL RIVER WATERWAY, MISSISSIPPI AND LOUISIANA
(Mobile District)

In 1975, shells constituted the principal commodity traveling over this 58-mile navigation channel from the mouth of West Pearl River at the Rigolets to the mouth of Bogue Lusa Creek at Bogalusa. Average annual commercial traffic on the waterway, 1971-1975, was 10,996 tons.

Commercial traffic on the waterway has decreased considerably in recent years, and the waterway and its banks are now largely used for hunting, fishing, boating, waterskiing, swimming, hiking, picnicking, and camping. The Corps of Engineers has constructed concrete boat launching ramps at the three locks and at Pools Bluff, and small boat portages at the Bogue Chitto and Pools Bluff sites so that small boats can be moved around the sills. Improved roads give access to the locks and the Pools Bluff sill. Many private roads and trails to the waterway are also in use. About 415,500 people visited this project in 1975.

Features of the project include a dredged channel 7 feet deep and 100 feet wide in the West Pearl River from its mouth to Holmes Bayou; a lateral canal 7 feet deep and 80 feet wide from the mouth of Holmes Bayou to Pools Bluff, with three locks having clear inside dimensions of 65 by 310 feet and a depth of 10 feet over the sills at low water; sills across Bogue Chitto and in the Pearl River just below

Pools Bluff to maintain the levels in the canal; and a dredged channel 7 feet deep and 100 feet wide in the Pearl River from Pools Bluff to the mouth of Bogue Lusa Creek.

The project was authorized by the River and Harbor Act of 1935. Construction began in 1938 and was substantially complete in 1953, having been interrupted during World War II. The construction cost was $8,275,000. Recreation facilities added after completion have cost approximately $144,000.

In 1966, the River and Harbor Act authorized modification of the Pearl River Waterway project to alleviate navigation difficulties at eight locations along the West Pearl River portion of the waterway below Lock 1. The modification of the project has been placed in an inactive status.

Flood Plain Information Reports

BOGALUSA
(Mobile District)

A flood plain information report for the Bogalusa area was completed and published in June 1973 at a cost of $24,000.

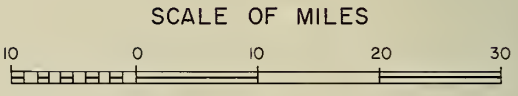
The study area encompasses the Bogue Lusa and Coburn Creeks watersheds and the Pearl River at Bogalusa. The area is subject to headwater flooding from the Bogue Lusa and Coburn Creeks and backwater flooding from the Pearl River. The report includes a history of flooding in Bogalusa and identifies those areas that are subject to possible future floods. Solutions to flood problems are not provided in the report; however, it furnished a suitable basis for the adoption of land-use control to guide flood plain development and thereby prevent intensification of problems.

Surveys Authorized or Under Way

PEARL RIVER BASIN, MISSISSIPPI AND LOUISIANA
(Mobile District)

This study was initiated in 1975 to review existing projects in the Pearl River Basin, with particular reference to providing barge navigation and water supply at Picayune, Mississippi. The study will include consideration of the need for any flow diversions between branches of the lower Pearl River and navigation improvements between the Gulf Intracoastal Waterway and Port Bienville, a new industrial park located on Mulatto Bayou, a tributary of the East Pearl River in Mississippi near the Louisiana line. The plans under study for access to Port Bienville include outlet channels from Mulatto Bayou through Little Lake to the Rigolets and through the mouth of the East Pearl River into Lake Borgne. Completion of the overall study is scheduled for 1980.

LAKE PONTCHARTRAIN BASIN



LAKE PONTCHARTRAIN BASIN

LAKE PONTCHARTRAIN BASIN

Introduction

The Lake Pontchartrain Basin comprises the area east of the Mississippi River bounded on the north by the State of Mississippi, on the east by the Pearl River Basin, and on the south and west by the east bank of the Mississippi River. The area is characterized by rolling hills and alluvial lowlands with a fringe of tidal marsh at the shorelines of Lakes Maurepas and Pontchartrain. Improvements have been authorized and/or constructed for purposes of navigation, flood control, and hurricane protection. Individual projects are described below.

Projects

AMITE RIVER AND BAYOU MANCHAC
(New Orleans District)

Completed in 1928 at a cost of $28,234, the project consists of a 7- by 60-foot channel from Lake Maurepas to Port Vincent, and the removal of channel obstructions between Port Vincent and the Kansas City Southern Railroad bridge which crosses Bayou Manchac at about Mile 8.5.

Although very little commercial traffic has been reported on this waterway in recent years, it is extensively used for recreational purposes. Average traffic from 1971-1975 was 11,575 tons. No commercial traffic was reported in 1971 and 1975.

AMITE RIVER AND TRIBUTARIES
(New Orleans District)

Year-round opportunities for water-based sports are available along this waterway. Hundreds of private camps are located in the area and 14 commercial access points provide launching, boats, bait, cabins, and restaurant facilities. State-owned public access facilities are located at U. S. Highway 71 on Reserve Canal, Garyville Canal, Blind River, and Bayou Francois. Other public launching areas are available at Port Vincent and Chinquapin.

Designed for flood control along the Amite River, the completed project consists of a 10.6-mile diversion channel from the Amite River at Mile 25.3 to Mile 4.8 of Blind River; enlargement of the Comite River from its mouth to Cypress Bayou; clearing and snagging of Amite River from its conjunction with the Comite at Mile 54 to Mile 35.7 at Bayou Manchac; enlargement and realignment of Amite River from Bayou Manchac to Mile 25.3; and clearing and snagging of Bayou Manchac from the Amite to Ward's Creek.

The diversion channel is connected to the Amite River by a control weir which serves to retain low flows in Amite River. A small navigation channel through the control allows small boats to pass to and

from the river and the diversion channel.

The State of Louisiana, Department of Transportation and Development, Office of Public Works, constructed approximately 2.7 miles of the diversion channel and the Comite River enlargement as a substitute for the cash contribution required by the project authorization. The Comite enlargement was to greater dimensions than that planned under the Federal project.

Maintenance of completed work within their respective boundaries is the responsibility of the Ascension and Livingston Parish Police Juries and the East Baton Rouge Parish Council.

Construction of this project was initiated in June 1957 and completed in February 1964 at a cost of $3,034,685. Cumulative benefits from flood damages prevented through June 1976 are estimated at $5,027,000.

BAYOU BONFOUCA
(New Orleans District)

Major traffic on Bayou Bonfouca is generated by a shipyard, a creosote treatment plant, and a clamshell storage area. In 1975, marine shells accounted for 68,706 tons of traffic on this waterway. Average annual traffic from 1971-1975 was 56,392 tons.

Completed in 1931 at a cost of $36,497, this project consists of an 8-mile-long channel, which is 10 feet deep, and with a bottom width of 60 feet. The waterway extends from Slidell to deep water in Lake Pontchartrain.

The lower end of this project provides access to Lake Pontchartrain from popular boating areas on Bayou Liberty.

BAYOU LACOMBE
(New Orleans District)

Although heavily used for boating, fishing, and access to Lake Pontchartrain, the major cargo on this waterway is gravel from the upper reaches of the bayou.

Both public and commercial launching ramps have been constructed by non-Federal interests.

Traffic on the waterway averaged 84,724 tons annually from 1971-1975, with 9,600 tons recorded for 1975.

Completed in 1938 at a cost of $4,716, the project consists of a 60-foot-wide, 8-foot-deep channel through the entrance bar in Lake Pontchartrain and removal of snags and overhanging trees from Mile 8.2 to the mouth of Bayou Lacombe.

The snagging has greatly enhanced this waterway for recreational use.

CHEFUNCTE RIVER AND BOGUE FALIA
(New Orelans District)

This waterway, which is approximately 14 miles in length, furnishes excellent fishing, boating, and other recreational opportunities. Adjacent higher lands are rapidly being developed for private homes and campsites.

The Chefuncte River and Bogue Falia project was authorized in 1881 and modified in 1930 and 1958. The original 8-foot project from Covington to Lake Pontchartrain was completed in 1929.

The present project provides for a 10- by 125-foot navigation channel from a 10-foot depth in Lake Pontchartrain to about Mile 3.5 of the Chefuncte River. From Mile 3.5 to Washington Street in Covington via the Chefuncte River and Bogue Falia, the channel would remain 8 feet deep.

The 10-foot enlargement below Mile 3.5 was completed in 1959. The cost of the project was $58,342. Average annual traffic from 1971-1975 was 79,946 tons.

LAKE PONTCHARTRAIN AND VICINITY HURRICANE PROTECTION
(New Orleans District)

A combination of levees, floodwalls, and flood control structures is being built in various locations along the shores of Lake Pontchartrain and Borgne as well as along the banks of adjacent waterways. The illustration on page 92 shows the details of the project which will provide protection to the Greater

BAYOU BIENVENUE CONTROL STRUCTURE

BAYOU DUPRE CONTROL STRUCTURE

New Orleans Metropolitan Area from hurricane flooding. Floodwalls and levees along the Inner Harbor Navigation Canal and around the areas east of that canal as well as around the Chalmette area are presently under construction with many portions already completed. The navigable floodgates at Bayous Bienvenue and Dupre are also complete. Substantial protection exists for the areas west of the canal except St. Charles Parish. The construction of the St. Charles Parish lakefront levee has been deferred indefinitely for environmental considerations.

Barrier complexes will be built at the tidal connections between Lake Pontchartrain and the Gulf of Mexico: The Rigolets, Chef Menteur Pass, and Seabrook. The structures comprising these complexes will be closed in advance of a hurricane and will limit the entry of hurricane generated tides into Lake Pontchartrain. This will reduce the flood threat to the lakeshore areas. The barrier complexes are illustrated in the artist's renditions on page 93.

Authorized by the Flood Control Act of 1965, this project will cost an estimated $378,000,000 of which approximately $118,000,000 will be borne by non-Federal interests. Federal construction was initiated in May 1967 and detailed planning is continuing on an accelerated schedule. Federal funds in the amount of $74,129,000 have been made available through September 1976. The project is scheduled for completion in 1992. When complete the project will provide essentially complete flood protection to 151,580 acres of land which includes 45,640 of urban development. Cumulative damages prevented by completed works

LEGEND
EXISTING LEVEE
LEVEE IMPROVEMENTS
CONTROL STRUCTURE
DRAINAGE STRUCTURE
FLOODGATE
LOCK
FLOODWALL
LAKE PONTCHARTRAIN AND VICINITY
HURRICANE PROTECTION PROJECT
ST. TAMMANY PARISH
10
LAKE PONTCHARTRAIN
ORLEANS PARISH
SEABROOK
90
RIGOLETS
CHEF MENTEUR
LAKE BORGNE
10
ST. CHARLES PARISH
JEFFERSON PARISH
47
MISSISSIPPI RIVER
MR-GO
ST. BERNARD PARISH

ABOVE–CHEF MENTEUR COMPLEX

ABOVE–SEABROOK COMPLEX

BELOW–RIGOLETS COMPLEX

are estimated at $90,000,000.

LAKE PONTCHARTRAIN LEVEES (New Orleans District)

Authorized by the Flood Control Acts of 1946 and 1950, the project includes construction of 10.2 miles of levee along the Lake Pontchartrain shoreline of Jefferson Parish; enlargement of 4.8 miles of levee along the Jefferson-St. Charles Parish line; and enlargement of 2.3 miles of the 17th Street Canal levee along the Jefferson-Orleans Parish line.

These levees protect about 50 square miles of residential and industrial development in Jefferson Parish from storm tides in Lake Pontchartrain. Three new highways, the New Orleans International Airport, numerous industrial and commercial enterprises, civic buildings, and hospitals are located in the area.

Authorization and construction of the levees set off an explosive economic expansion. Population increased from 54,000 in 1950 to 133,000 in 1960 and, in 1975, was over 400,000, and the growth continues. Completed in 1956, the project cost $8,303,110, including a cash contribution of $1,350,000 by local interests. After Hurricane Betsy in 1965, the Pontchartrain Levee District raised the levees to provide added hurricane protection, expending approximately $2,300,000.

Local interests were required to rehabilitate and improve the interior drainage system in the area. Project maintenance is the responsibility of the Pontchartrain Levee District.

As of 30 June 1976, the project had prevented cumulative flood damages estimated at $1,050,755,000, including $21,800,000 for Hurricane Flossy (September 1956), $110,000,000 for Hurricane Carla (September 1961), $98,000,000 for Hurricane Hilda (October 1964), $70,000,000 for Hurricane Betsy (September 1965), $50,000,000 for Hurricane Camille (August 1969), and $228,500,000 for Hurricane Carmen (September 1974). Additional benefits were accrued during the flood of 1973 and 1974.

PASS MANCHAC (New Orleans District)

Pass Manchac provides access to Lakes Pontchartrain, Maurepas, and adjacent areas for fishing, crabbing, and hunting. The Louisiana Department of Highways is allowing an abandoned highway bridge to be used as a fishing pier. Launching ramps and commercial facilities are available at U. S. Highway 51.

Major cargo in the pass is marine shells, which accounted for 51 percent of the commerce in 1975. Average annual traffic from 1971-1975 was 454,539 tons.

Authorized in 1910, the project called for removal of snags, logs, and other obstructions from the bars at the entrance of the pass and throughout its length between Lakes Maurepas and Pontchartrain. The 7-mile channel was completed in 1912 at a cost of $1,374.

TANGIPAHOA RIVER (New Orleans District)

This project, completed in 1884 at a cost of $11,500, provides for removal of overhanging trees, snags, and obstructions on the lower 53-1/2 miles of the river. Intermittent maintenance is required.

Excellent opportunities for water-based recreation are available in this area. Ponchatoula Beach, a popular State-developed area for swimming and picnicking, Lee's Landing, and Bedico Creek open the waterway to the public.

The project authorized under Section 107 of the River and Harbor Act of 1960, as amended, further enhances the excellent recreational potential of this waterway.

TANGIPAHOA RIVER NAVIGATION PROJECT (New Orleans District)

A boat channel through the bar in Lake Pontchartrain at the mouth of the Tangipahoa was completed in January 1971. Authorized under Section 107 of the River and Harbor Act of 1960, as amended by Section 310 of the River and Harbor Act of 1960, the project provides an 8- by 10-foot

navigation bar entrance channel in Lake Pontchartrain. The Federal cost of this Section 107 project (see page xviii of the Introduction) was $61,211. Local interests contributed $29,346.

TICKFAW, NATALBANY, PONCHATOULA, AND BLOOD RIVERS
(New Orleans District)

These beautiful waterways provide excellent opportunities for fishing, boating, and skiing. Public access is available at Wadesboro and Springfield. Commercial facilities are located on the Natalbany, Blood, and Tickfaw Rivers. Average traffic from 1971-1975 was 10,685 tons.

Authorized work includes removal of obstructions in the Tickfaw River from its mouth to Mile 26; in the Blood River from its mouth to the head of navigation about Mile 4; and in the Natalbany and Ponchatoula Rivers for a distance of 15-1/2 miles. The project was completed in 1921 at a cost of $8,115.

Small Projects

SNAGGING AND CLEARING PROJECTS

Under the authority of Section 2 of the Flood Control Act of 1937 (and subsequent modifications), which is discussed on page xviii of the Introduction, work has been accomplished on the following streams in the Lake Pontchartrain Basin:

Stream	Type of Improvement	Length of Improvement miles	Date Completed	Cost
Bayou Vincent	Clearing, snagging, and enlargement	1.4	1947	$13,000
Bayou Francois	Clearing and snagging	8.2	1948	13,500
New River	Clearing, snagging, and enlargement	8.7	1948	31,500
Ponchatoula Creek	Clearing and snagging	3.3	1949	10,464
Selsers Creek	Clearing and snagging	4.5	1950	4,958
Yellow Water River	Clearing and snagging	2.8	1950	3,136
Natalbany River	Clearing, snagging, and enlargement	5.0	1954	71,043
Tickfaw River	Clearing and snagging	16.3	1958	50,107

Flood Plain Information Reports

BATON ROUGE NO. 1
(New Orleans District)

A flood plain information report on Bayou Fountain in Baton Rouge was completed and published in June 1971 at a cost of $29,985.

The study area encompasses Bayou Fountain from its confluence with Bayou Manchac upstream

to Mile 13.3. The report indicates that the lower portion of the area is subject to backwater flooding and the upper reaches are subject to headwater flooding. Backwater flooding has been reduced since completion of the Amite River and Tributaries project; see page 89.

BATON ROUGE NO. 2
(New Orleans District)

A flood plain information report on Ward Creek and tributaries in Baton Rouge was completed and published in September 1972 at a cost of $27,402.

The study covers Ward Creek and tributaries from Ward Creek confluence with Bayou Manchac to Mile 12.6. The lower portion of the area is subject to backwater flooding and the upper reaches to headwater flooding. The report includes a history of flooding along Ward Creek and tributaries; it identifies those areas that are subject to possible future floods, and furnishes a suitable basis for the adoption of land-use control to guide flood plain development.

BATON ROUGE NO. 3
(New Orleans District)

A flood plain information report on the Claycut Bayou and Jones Creek area in the vicinity of Baton Rouge was completed and published in October 1974 at a cost of $26,000.

The study covers Claycut Bayou from Mile 0 at Amite River to above Mile 10 and Jones Creek from Mile 0 at Amite River to about Mile 12. The report indicates that the area is subject to headwater flooding. During high stages on the Amite River, the lower reaches of streams are subject to backwater flooding.

BATON ROUGE NO. 4
(New Orleans District)

A flood plain information report on Hurricane Creek, Monte Sano Bayou and tributaries in and near the city of Baton Rouge was completed in September 1976 at a cost of $32,000.

The study covers Hurricane Creek, Monte Sano Bayou and tributaries from Hurricane Creek confluence with Comite River and a portion of the Comite River to the Scotlandville and Gibbens Laterals, north of Scotlandville. The report indicates that, while most of the stream channels in the study area have been improved since 1959, the threat of backwater flooding along lower Hurricane Creek from the Comite River and along lower Monte Sano Bayou from the Mississippi River remains significant.

BATON ROUGE NO. 5
(New Orleans District)

A flood plain information report for areas of East Baton Rouge and Baker that would be flooded from the Comite River, Cypress Bayou, and tributary streams (the South, East, and West Laterals, and Gibbens Lateral) was completed in September 1976 at a cost of $35,000.

Developments within the flood plains of these streams experienced considerable damage during the floods of 1953, 1962, 1964, and 1967. Other floods known to have produced some property damage include those of 1947 and 1973. Since 1962, a series of channel improvement projects have been accomplished in the Cypress Bayou Basin and on the lower Comite River. During this period, approximately 11.3 miles of channel have been improved along the study reaches. Although these projects have lowered flood heights, markedly in some areas, studies indicate that a potential flood threat still remains.

COVINGTON
(New Orleans District)

A flood plain information report on the Covington area was completed and published in November 1971 at a cost of $29,947.

The study covers Tchefuncta River from Mile 10.5 to 29, Bogue Falaya River from Mile 0 to 13.3, and Little Bogue Falaya River from Mile 0 to 4.1. The three streams are subject to headwater flooding. The report includes a history of flooding in the Covington area; it identifies those areas that are

subject to possible future floods, and provides a suitable basis for the adoption of land-use control to guide flood plain development.

GONZALES
(New Orleans District)

A flood plain information report on the Gonzales area was completed and published in March 1971 at a cost of $33,483.

The study area encompasses New River from Mile 11.2 to Mile 22, Bayou Francois from Mile 4.9 to Mile 10.5, and Bayou Black from Mile 8.1 to Mile 12.8. The report indicates that flood problems in this area are due to headwater flooding. The report includes a history of flooding in Gonzales and vicinity; it identifies areas subject to possible future floods and provides a basis for the adoption of land-use controls to guide flood plain development.

SLIDELL
(New Orleans District)

A flood plain information report on Slidell and vicinity was completed and published in December 1971 at a cost of $26,981.

The study covers the following streams: Bayou Bonfouca from Mile 4.1 to 6.8, Bayou Vincent from Mile 0 to 3.6, W-14 Main Diversion Canal from Mile 1.4 to 7.7, Doubloon Branch from Mile 1.7 to 3.5, and French Branch from Mile 0 to 3.5. Most of these streams are subject to a combination of tidal and headwater flooding. There are no existing comprehensive flood control projects that would benefit the entire watershed. However, when completed, the Lake Pontchartrain and Vicinity Hurricane Protection will significantly reduce flooding from hurricanes in Slidell and vicinity, see page 90.

Flood Insurance Studies

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, the Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Lake Pontchartrain Basin are listed below.

	Study Area
Completed:	Baton Rouge, East Baton Rouge, and Baker
	East Baton Rouge Parish
	Harahan
	Jefferson Parish
	Jefferson Parish (Type 19)
	Kenner
	Metairie
	New Orleans (Inner-Harbor Area)
	Orleans Parish (Type 19)
	Remainder of Orleans Parish
Under Way:	Ascension Parish (East Bank)
	Gonzales
	Grammercy
	Lutcher
	Mandeville
	St. John the Baptist Parish
	Sorrento

Surveys Authorized or Under Way

BAYOU BONFOUCA
(New Orleans District)

This study will determine if the existing project should be modified in any way at this time with particular reference to providing a more favorable alignment between Lake Pontchartrain and the shipyards at Slidell. The study has not yet been funded.

BAYOU MANCHAC AND AMITE RIVER
(New Orleans District)

This study will determine the advisability of providing a navigable connection between the Mississippi River and Bayou Manchac and improving Bayou Manchac and Amite River for navigation. The study was initiated in 1976 and is scheduled for completion in 1979.

LAKE PONTCHARTRAIN, JEFFERSON PARISH
(New Orleans District)

This study will determine the advisability of providing interim hurricane protection until completion of the Lake Pontchartrain and vicinity barrier. The study has not yet been funded.

LAKE PONTCHARTRAIN, NORTH SHORE
(New Orleans District)

This study initiated in 1965 is to determine the advisability of improvements for flood control, small boat navigation, shoreline protection, and recreation along the north shore of the lake. The study is scheduled for completion in 1977.

LAKE PONTCHARTRAIN, WEST SHORE
(New Orleans District)

This study will comprise review of the Lake Pontchartrain and vicinity project with particular reference to providing for hurricane protection and flood control in St. James and St. John the Baptist Parishes and that part of St. Charles Parish west of the Bonnet Carré Spillway. The study has not yet been funded.

MISSISSIPPI AND LOUISIANA ESTUARINE AREAS
(New Orleans and Mobile Districts)

This study will comprise a review of the report on the MR&T project and other pertinent reports, with a view toward determining the advisability of providing fresh water into Lakes Maurepas, Pontchartrain, Borgne, and Mississippi Sound areas in the interest of improving the wildlife and fisheries resources of this area. The study has not yet been funded.

NEW ORLEANS-BATON ROUGE METROPOLITAN AREA
(New Orleans District)

This study, initiated in 1973, is directed toward comprehensive, multipurpose planning for the conservation, utilization, and development of the most intensively industrialized and populated sector in Louisiana. The study area encompasses 20 parishes in southeast Louisiana and includes the New Orleans and Baton Rouge standard metropolitan statistical areas and surrounding parishes. The authorizing resolution calls for the consideration of water and related land resources development for flood protection; flood plain management; navigation; regional water supply; regional wastewater and storm-water management facilities; recreation; water quality control; conservation and enhancement of fish and wildlife; and other measures for environmental enhancement, economic, and human resources development. In accomplishing the study, consideration will be given to urban planning activities within the study area, and any program developed will comprise components of comprehensive development plans formulated by Federal, State, and local agencies. The study is scheduled to be completed in 1979.

MISSISSIPPI RIVER DELTA AREA TO THE EAST ATCHAFALAYA BASIN PROTECTION LEVEE

MISSISSIPPI RIVER DELTA AREA TO THE EAST ATCHAFALAYA BASIN PROTECTION LEVEE

MISSISSIPPI RIVER DELTA AREA TO THE EAST ATCHAFALAYA BASIN PROTECTION LEVEE

Introduction

This portion of the coastal area is located in the lower southeastern part of the State, west of the East Atchafalaya Basin protection levee. Improvements have been authorized for purposes of navigation, flood control, beach erosion control, hurricane protection, recreation, and other associated uses. Most of the area is low lying and control of the environment is and has been vital to the progress of the area. Individual projects are described below.

Projects

BARATARIA BAY WATERWAY
(New Orleans District)

The River and Harbor Act of March 1919 authorized a dredged channel, 5 feet deep by 50 feet wide from Bayou Villars to Grand Isle, a distance of 37 miles. The project was completed in 1925 at a cost of $73,037.

A modification was authorized by the River and Harbor Act of 3 July 1958, to provide for a channel approximately 37 miles long with a 12-foot depth and 125-foot width at mean low Gulf from its beginning at the Gulf Intracoastal Waterway to Grand Isle, following the route of the previous project to Mile 15.5 in Bayou St. Denis; thence by a relocated channel along the western shore of Barataria Bay and through Barataria Pass to the 12-foot depth contour in the Gulf of Mexico, with a 4.3-mile extension of the project to include the westerly 4.3 miles of Bayou Rigaud. The project modification was completed in November 1963.

In addition, authority was granted in October 1967, under provisions of the River and Harbor Act of 1915, to enlarge the bar channel from 125 to 250 feet between Mile 1.26 and the 12-foot contour. The enlargement was accomplished in 1967 at a cost of $204,400.

Average annual traffic from 1971-1975 was 4,120,206 tons, consisting mainly of oil industry cargo and liquid sulphur. Opportunities for recreational boating and fishing are plentiful throughout the area. The *Voyageur* and the *Mark Twain,* two popular excursion boats, operate on regular schedules between New Orleans and Lafitte to show sightseers the colorful and historic bayou country.

The waterway and adjacent waters below Lafitte are used extensively by commercial fishermen and oystermen. Special events, such as the pirogue races at Barataria and the fishing rodeos at Grand Isle, add to the value of the waterway for recreational purposes.

BAYOU DUPRE
(New Orleans District)

The oil industry provides the major cargo on

GRAND ISLE

this waterway although it is heavily used by recreational craft moving between Violet and Lake Borgne. In 1975, gasoline accounted for 73,852 tons of traffic, liquified gases for 51,470 tons, and marine shell for 18,361 tons. Average traffic from 1971-1975 was 172,390 tons.

This project includes a 6-foot-deep channel from the highway bridge at Violet to deep water in Lake Borgne, with widths of 80 feet in the canal and bayou and 100 feet in the lake. In addition to the 7.3-mile channel, the project also includes a turning basin 100 feet wide and 200 feet long at Violet. The Violet Lock, a privately owned connection with the Mississippi River, was permanently closed in 1950. The project was completed in 1939 at a cost of $38,915.

GRAND ISLE BEACH EROSION
(New Orleans District)

Because of Grand Isle's location and topography, improvements on the island are subject to damage from erosion along its gulf shore and passes and from the combined effects of winds and tides generated by hurricanes. Grand Isle is located on the Gulf of Mexico in Jefferson Parish and is one of the many low, irregular islands separated by bays, lagoons, and bayous which form a part of the shoreline of Louisiana. It is a base of operation for large offshore petroleum and sulphur industries and is a commercial fishing and sport fishing center. It is also an important recreational area for residents of Louisiana and nearby States.

The current project, authorized in October 1976 under the authority of Section 201 of the Flood Control Act of 1965 (PL 89-298), provides for hurricane protection and beach erosion for the island. The plan of improvement provides for the construction of a sandfilled berm and a vegetated and sandfill dune extending the length of Grand Isle's gulf shore and a jetty to stabilize the western end of the island at Caminada Pass. Work on these improvements has not yet begun.

BAYOU GROSSE TETE
(New Orleans District)

Snagging, clearing, and dredging were authorized in 1912 to secure a 29-mile navigation channel 5 feet deep at mean low water and 60 feet wide from the mouth of Bayou Plaquemine to 5 miles above the town of Maringouin. A channel 5 by 60 feet was completed between Mile 0 and Mile 10.3 in 1914, and a channel 5 by 40 feet was completed to Mile 29 in 1916.

Completion of the channel between Mile 10.3 and 29.0 to project dimensions (5 by 60 feet) has been delayed by lack of excavated material disposal areas within a reasonable distance of the necessary excavation. This uncompleted portion of the work has been classified as inactive.

The cost of completed work is $29,392. The average annual traffic for 1971-1975 was 2,199 tons; there was no commercial traffic reported in 1972 and 1973.

BAYOU LAFOURCHE AND LAFOURCHE-JUMP WATERWAY
(New Orleans District)

Features of the original project authorized in 1935 include permanent closure of the head of Bayou Lafourche without a lock; a channel 6 by 60 feet from Napoleonville to Lockport; a channel of the same dimensions from the Gulf Intracoastal Waterway at Larose to the Gulf of Mexico with a jettied entrance at Belle Pass; and the closure of Pass Fourchon.

Construction of improvements for the bayou below Larose was completed in 1941 at a cost of $524,024. That portion of the project between Thibodaux and the head of the bayou at Donaldsonville was deauthorized in November 1967, and the work between Thibodaux and Lockport is inactive because of the lack of rights-of-way and excavated material disposal areas.

The project was modified by the River and Harbor Act of 1960 to provide for a channel 9 feet deep and 100 feet wide from Golden Meadow to Leeville; a channel 12 feet deep and 125 feet wide from Leeville to the Gulf including modification and extension of the jetties to the 12-foot depth contour if advisable; an auxiliary channel 12 feet deep and 125 feet wide extending from the Gulf Intracoastal Waterway west of Larose to Bayou Lafourche below Leeville, then eastward through the Southwest Canal, then through new land cuts and existing channels to connect with the Bayou Rigaud section of the Barataria Bay Waterway at Grand Isle, page 101.

Enlargement of Bayou Lafourche between Golden Meadow and the Gulf of Mexico has been completed. Planning has been completed for the Leeville to Grand Isle channel; however, construction has not been initiated because of the failure of local interests to furnish rights-of-way for this reach. Dredging of the auxiliary channel between Larose and Leeville will begin upon the availability of rights-of-way and funds. The total estimated cost of the modified project is $16,284,000 of which $11,400,000 is Federal and $4,850,000 is non-Federal. An additional $34,000 will be spent by the U. S. Coast Guard for navigation aids.

Offshore oil operations, sulphur mining, and commercial fishing are the industries which benefit from this project. In addition, the auxiliary channel will help alleviate navigation hazards along Bayou Lafourche.

Planning is in progress to develop recreation and boating access to the project. Average annual traffic on Bayou Lafourche from 1971-1975 was 1,623,872.

BAYOUS LALOUTRE, ST. MALO, AND YSCLOSKEY
(New Orleans District)

This 30-mile project has been used by oil companies as a safe, inland route for transporting crude oil, drilling equipment, and personnel.

The channels are, however, presently used mainly by commercial trappers and fishermen en route to Lake Borgne, Chandeleur Sound, and intervening waterways and marsh areas. Excellent commercial launching and boat rental facilities are available in the area, further enhancing the recreational potential. Average annual traffic from 1972-1975 was 34,228 tons. There was no commerce

reported in 1971. Traffic reported for 1975 was 125,076 tons.

Initially authorized in 1937 and modified in 1945, the project was completed in May 1956 at a cost of $96,916.

As modified, the project provides for a 5- by 40-foot channel from deep water in Lake Borgne to the shoreline at the mouth of Bayou Yscloskey; a 6- by 40-foot channel from deep water in Lake Borgne through Bayous St. Malo, LaLoutre, and Eloi, to deep water in Lake Eloi; and a 5- by 30-foot channel in Bayou LaLoutre between Hopedale and Bayou St. Malo.

BAYOU SEGNETTE
(New Orleans District)

Improvements were made along this waterway under Section 3 of the River and Harbor Act of 1945 (Public Law 79-14) in 1948 and 1951. Those made in 1948 at a cost of $20,279 consisted of reestablishing a usable navigation channel 6 feet deep and 40 feet wide between Bayou Bardeaux and the westward end of the Westwego Canal, a distance of about 6 miles.

Improvements made in 1951 at a cost of $23,207 consisted of channel enlargement to provide an 8- by 50-foot clear channel between Miles 1.5 and 5.5.

Total cost of improvement along Bayou Segnette was $43,486.

BAYOU SEGNETTE WATERWAY
(New Orleans District)

Construction of a 9-foot-deep channel over a bottom width of 60 feet was authorized by the River and Harbor Act of 1954.

The authorization for this project provides for maintenance to a 6-foot depth only until such time as, in the discretion of the Chief of Engineers, maintenance to a greater depth (not to exceed 9 feet) is justified. An interim channel 8 feet deep over a bottom width of 80 feet, including overdepth, was completed in August 1957 at a cost of $238,828. The estimated cost of construction for the authorized project is $374,000 (1957).

The channel begins at the southern end of Company Canal at Westwego and follows the existing channel of Bayou Segnette (including its cutoffs) southward to approximately Mile 5.6, thence runs southerly, via new land cut lying to the east of Lake Salvador, to the Intracoastal Waterway at Bayou Villars and the head of the Barataria Bay Waterway.

The project, 12.2 miles long, affords a shorter and direct route for the larger and modern fishing and shrimping boats to the packing and canning industries on Bayou Segnette and Company Canal at Westwego. The average annual traffic on the waterway from 1971-1975 was 3,234 tons. Yearly traffic varies widely; 1974 traffic was 6,385 tons; and 1975 traffic was 1,625 tons.

BAYOU TERRE AUX BOEUFS
(New Orleans District)

This bayou, which serves as a boundary line between Plaquemines and St. Bernard Parishes, was snagged and cleared between Miles 10.5 and 18.25, and excavated, snagged, and cleared between Miles 18.25 and 19.5. Authorized under the provisions of Section 3, River and Harbor Act of 1945 (Public Law 79-14), this 5- by 50-foot navigation channel was completed in 1951 at a cost of $24,832.

BAYOU TERREBONNE
(New Orleans District)

Operational supplies for drilling for crude oil comprise the major cargo on this waterway which was completed in 1916 at a cost of $120,089. The waterway also serves as an access route for fishing and hunting in the coastal region. Average annual traffic from 1971-1975 was 629,091 tons.

The Bayou Terrebonne project consists of a 6-foot-deep channel of suitable width from Bush Canal to the St. Louis Cypress Company Bridge at Houma, a distance of 24 miles. The channel was authorized in 1910 with modifications in 1912, 1913, 1959, and 1964. The 1959 and 1964 modifications authorized abandonment of about 1 mile of the channel in Houma.

CHOCTAW BAYOU
(New Orleans District)

This Section 205 project will provide flood protection to an area of 9,200 acres just west of Port Allen by clearing and snagging and channel excavation on Choctaw Bayou and its tributaries. The project was approved on 11 April 1968, and plans and specifications have been prepared. Construction was initiated in June 1973 and completed in April 1976. The total Federal cost of the project was $840,700; the total non-Federal cost has not been finalized.

LAROSE TO GOLDEN MEADOW HURRICANE PROTECTION
(New Orleans District)

This project, authorized by the Flood Control Act of 1965, protects highly developed residential and commercial areas along Bayou Lafourche between Larose and Golden Meadow from storm tides and hurricane floodwaters. The project includes enlargement of 3 miles of existing levees, and construction of about 38 miles of new levees, 8 miles of low interior levees, two major floodgates in Bayou Lafourche, and several flap-gated drainage culverts. The estimated Federal cost (30 June 1976) is $26,900,000; the non-Federal cost, including a cash contribution of $6,070,000, is $11,600,000. Project construction was initiated in January 1975 and is currently scheduled for completion in 1987.

HARVEY CANAL-BARATARIA LEVEE
(New Orleans District)

This project consists of construction of a levee along the Gulf Intracoastal Waterway in Jefferson Parish between Roussel Pumping Station and Counsins Canal, enlargement of the existing levee from Counsins Canal to Mile 6, and a new levee from Mile 6 to Louisiana State Highway 45 near Crown Point. The plan of improvement also includes construction of a new pumping station by local interests.

The levee embankment will be constructed in two lifts. Construction of the first lift was initiated in August 1971 and was completed in January 1974. Work on the second lift has not begun. The estimated project cost (30 June 1976) is $1,000,000 Federal, and $5,020,000 non-Federal.

HOUMA NAVIGATION CANAL
(New Orleans District)

The channel, 15 feet deep at mean low Gulf level over a bottom width of 150 feet, allows navigation from the Gulf Intracoastal Waterway near the western edge of Houma to the Gulf of Mexico. Federal maintenance of this canal, completed by non-Federal interests in 1962, was officially assumed in 1963. Maintenance cost to date is $4,065,796.

During the period from 1971-1975, traffic on this waterway averaged 2,943,706 tons annually with the oil industry contributing the major cargo.

LITTLE CAILLOU BAYOU
(New Orleans District)

Completed in 1929, this 20-mile channel, 5 feet deep and 40 feet wide, from Robinson Canal to the head of Little Caillou Bayou cost $77,761. Average annual traffic from 1971-1975 was 1,037,935 tons; 1975 traffic was 834,366 tons.

MISSISSIPPI RIVER-GULF OUTLET
(New Orleans District)

New Orleans is the gateway to the great system of inland waterways of the central valley of the Nation. Adequate outlets to the Gulf of Mexico are essential for economical transportation to and from this port. The Mississippi River-Gulf Outlet affords a tidewater outlet to the Gulf that is about 37 miles shorter than the Mississippi River route.

The channel also provides a potential for harbor development large enough for dispersion of docks and cargo-handling facilities, thus allowing more flexible operation for inland and seagoing commerce. Sailing time, ship turnaround time, navigation hazards, and congestion all tend to be reduced by the project.

The project was authorized by Public Law 455, approved March 1956, as a feature of the project, "Mississippi River, Baton Rouge to Gulf of Mexico" (page 23). It consists of a ship channel 36 feet deep and 500 feet wide extending approximately 76 miles in a land and water cut from the junction of the Inner Harbor Navigation Canal and the Gulf Intracoastal Waterway in New Orleans to the −38-foot contour in the Gulf. Jetties for the reduction of shoaling, a turning basin, and a lock and connecting channel with the Mississippi River are salient features of the project.

From the junction of the Gulf Intracoastal Waterway and the Inner Harbor Navigation Canal, the channel follows the Gulf Intracoastal Waterway to the vicinity of Highway 47 (Paris Road), from whence it proceeds in a generally southeasterly direction along the south shore of Lake Borgne through the marshes, across Chandeleur Sound between Breton and Grand Gosier Islands, and to the −38-foot contour in the Gulf of Mexico. In the open waters of the Gulf, the channel dimensions increase to 38 by 600 feet.

Construction of the channel was initiated in March 1958. An interim channel 36 by 250 feet was opened to traffic in July 1963. Enlargement of the channel to full project dimensions was completed in January 1968.

The turning basin has been constructed at the intersection of the Mississippi River-Gulf Outlet channel and the Inner Harbor Navigation Canal. A fixed, high-level 4-lane highway bridge at Paris Road has also been constructed under a reimbursable agreement with the Louisiana Department of Highways. The jetties have been completed to the 6-foot contour. The south dike has been extended about 5.3 miles (Mile 14.9 to Mile 20.2).

A study is in progress to determine the feasibility of replacing the existing Inner Harbor Navigation Canal lock which has dimensions of

MISSISSIPPI RIVER-GULF OUTLET

MICHOUD CANAL

74 feet by 626 feet, with a lock 150 feet wide and 1,200 feet long.

Traffic on the Mississippi River-Gulf Outlet increased from 3,094,164 tons in 1969 to 5,386,829 tons in 1975. The average annual traffic from 1971-1975 was 4,693,919 tons. Major types of cargo moving over the channel include crude petroleum, primary metal products, and grain. The total project costs are estimated (30 June 1976) to be $273,000,000 Federal, and $100,200,000 non-Federal. In addition, the U. S. Coast Guard is to provide navigation aids at a cost of $37,000. Federal funds in the amount of $69,420,000 have been allotted through June 1976.

The Board of Commissioners of the Port of New Orleans has established a bulk commodity handling facility on the channel reach, and is planning a large expenditure for the creation of a "Centroport" which would locate extensive port facilities on the channel.

MISSISSIPPI RIVER-GULF OUTLET, MICHOUD CANAL (New Orleans District)

The project provides a 36- by 250-foot ship channel, extending from the Mississippi River-Gulf Outlet along a part of the Gulf Intracoastal Waterway and through the Michoud Canal. An 800- by 800-foot turning basin is located in the northern end of the project.

Michoud Canal currently serves barge traffic to and from plants manufacturing chemicals and portland cement. The channel serves the added purpose of providing direct foreign export of fertilizers. Public wharf facilities are to abut the turning basin.

The project was authorized by the River and Harbor Act of 1968. The total construction cost was $2,770,000. Construction was initiated in March

NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT
MISSISSIPP
MR-GO
G.I.W.W
39
23
RIVER
REACH C
Phoenix
Pointe a la Hache
Bohemia
BRETON SOUND
City Price
BARRIER LEVEE
Port Sulphur
Tropical Bend
Empire
REACH A
Buras
Fort Jackson
Venice
REACH B-1
REACH B-2
GULF OF MEXICO

1974 and was completed in November 1974.

NEW ORLEANS TO VENICE HURRICANE PROTECTION (New Orleans District)

Because the developed areas along the Mississippi River below New Orleans are particularly vulnerable to hurricane flooding, increased protection for four reaches was authorized by the River and Harbor Act of 1962 under the title "Mississippi River Delta at and Below New Orleans." Features of the project include increasing the height and cross section of the existing back levees, constructing new back levees, and modifying existing drainage facilities. As part of the project, a barrier levee on the east bank of the Mississippi River would be constructed to exclude tidal surges which might come across the marshes to the east.

The total project costs are estimated to be $91,000,000 for the Federal Government and $39,000,000 for non-Federal interests. Location and estimated total cost for the four reaches to be improved are:

Location	Estimated Cost
Reach A	
City Price to Empire	$ 34,900,000
Reach B1	
Empire to Fort Jackson	33,300,000
Reach B2	
Fort Jackson to Venice	27,700,000
Reach C	
Phoenix to Bohemia	13,660,000
East Bank Barrier Plan	
Bohemia to Mile 10 Above Head of Passes	20,360,000
Total	$130,000,000

Planning is under way for all reaches. Construction was initiated in August 1968 on Reach B1 near Empire. The Empire floodgate on Reach B1 has been completed and was placed in operation in early 1976. The remaining construction is continuing on this reach. Construction was initiated on Reach B2 in July 1974 and is continuing. Under an agreement with the Corps of Engineers, the initial phase of construction of Reach C levee was accomplished to an interim grade by local interests. Local interests have since, under the second phase, constructed to project grade half of Reach C, with construction of the remaining reach to project grade to be initiated in 1977. Local interests will be given credit for cost incurred for this reach as part of the 30 percent required non-Federal participation for the entire project.

WATERWAY FROM EMPIRE TO THE GULF OF MEXICO (New Orleans District)

Authorized in 1946 and completed in 1950 at a cost of $1,068,142, this project consists of a 9-by 80-foot channel from Doullut Canal near Empire southward to the Gulf. Extension of the existing jetties from the 6-foot contour to the 9-foot contour is authorized. The jetties would be extended if and when it becomes apparent that such extension will be more economical than maintenance dredging.

The needs of a large fishing fleet, which handled 101,168 tons of seafood in 1975, and those of adjacent offshore oil operations are served by this 10-mile channel from Empire to the Gulf of Mexico. Crude petroleum accounted for 79 percent of the commerce reported in 1975. The Mississippi River Delta and the Gulf of Mexico in the vicinity of Empire abound in opportunities for fishing and hunting, and tthe waterway is heavily utilized by sportsmen throughout the entire year. Average annual traffic for the period 1971-1975 was 418,514 tons; traffic in 1975 was 1,103,503 tons.

WATERWAY FROM THE INTRACOASTAL WATERWAY TO BAYOU DULAC-BAYOUS GRAND CAILLOU AND LE CARPE, LA. (New Orleans District)

This waterway, 5 feet deep and 40 feet wide, extends from the Gulf Intracoastal Waterway at Houma, through Bayous Le Carpe, Pelton, and Grand Caillou to Bayou Dulac, a distance of about 16.3 miles. The project was completed in 1938 at a cost of $51,300.

Modification of this project to provide a channel 10 feet deep and 45 feet wide in Bayou Le Carpe from the Gulf Intracoastal Waterway to the Houma Navigation Canal was authorized by the River and Harbor Act of 1962. The modification was completed in 1964 at a Federal cost of $78,342. The average annual traffic over this waterway from 1971-1975 was 645,695 tons.

Small Projects

SNAGGING AND CLEARING PROJECT

Under authority of Section 2 of the Flood Control Act of 1937, and subsequent modifications, 8.2 miles of Bayou L' Eau Bleu were enlarged in 1948 at a cost of $44,081.

Flood Insurance Studies

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, the Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Mississippi Delta area to the East Atchafalaya basin protection levee are as follows:

	Study Area
Completed:	Gretna
	Harvey-Gretna
	Louisiana Gulf Coast
	St. Bernard Parish, Area No. 1, Verret to Hopedale-Delacroix
	St. Bernard Parish, Area No. 2, Violet to Verret
	St. Bernard Parish, Area No. 3, Orleans-St. Bernard Parish Line to Violet
	St. Bernard Parish (Type 19)

	Study Area
Completed:	Westwego
Under Way:	Ascension Parish (West Bank)
	Donaldsonville
	Houma
	Lafourche Parish
	Lockport
	Plaquemines Parish
	Terrebonne Parish
	Thibodaux

Surveys Authorized or Under Way

BARATARIA BAY WATERWAY, DUPRE CUT
(New Orleans District)

This study, initiated in 1972, comprises a review of the existing project to determine the advisability of providing bank stabilization along Bayou Barataria and Bayou Dupont. Completion is scheduled for 1979.

BARATARIA BAY WATERWAY, ENTRANCE CHANNEL
(New Orleans District)

This study, initiated in 1972, comprises a review of the existing project to determine the advisability of enlarging the entrance channel. Completion of the study has not yet been scheduled.

BAYOU BARATARIA, BAYOU PEROT
(New Orleans District)

The study is under way to determine the advisability of providing a navigation channel from Barataria Bay Waterway in the vicinity of Lafitte to the Gulf Intracoastal Waterway at Bayou Perot. The study is scheduled for completion in 1978.

BAYOU CHEVREUIL
(New Orleans District)

This study is to determine the feasibility of providing channel and bank improvements along Bayou Chevreuil in the interest of flood control and drainage. The study has not yet been funded.

BAYOU GRAND CAILLOU
(New Orleans District)

This study is to determine the feasibility of enlarging and realigning Bayou Grand Caillou from the Houma Navigation Canal to the Gulf of Mexico. The study has not yet been funded.

BAYOU LAFOURCHE AND LAFOURCHE-JUMP WATERWAY
(New Orleans District)

This study will review the report of the Chief of Engineers on Bayou Lafourche and Lafourche-Jump Waterway and other pertinent reports, to determine whether any modifications of the recommendations contained therein are advisable at this time with particular reference to providing adequate channel dimensions to meet the needs of existing and future navigation. The study has not yet been funded.

GULF COAST DEEPWATER FACILITIES
(Mississippi River Commission)

This study was conducted to determine deepwater port facilities for Texas, Louisiana, Mississippi, Alabama, and Florida, which would be required to accommodate very large bulk cargo carriers including, but not limited to, offshore facilities. The report on the study is presently under review in the Office of the Chief of Engineers.

GULF INTRACOASTAL WATERWAY. LOUISIANA AND TEXAS
(New Orleans District)

This study will investigate the advisability of modifying the existing project in any way at this time, particularly with regard to widening and deepening the existing and/or authorized channels status. The study was initiated in 1976 and is scheduled for completion in 1983.

GULF INTRACOASTAL WATERWAY LOUISIANA SECTION, HIGH-LEVEL HIGHWAY CROSSINGS
(New Orleans District)

This study is under way to determine whether any project modifications are advisable in order to provide high-level highway crossings at strategic points, in the interest of safety from hurricanes and to improve operation of the waterway. The study is scheduled for completion in 1978.

LOUISIANA COASTAL AREA
(New Orleans District)

This study is under way to review reports on coastal area projects to determine the advisability of improvements, or modifications to existing improvements, in the interest of hurricane protection, prevention of saltwater intrusion, preservation of fish and wildlife, prevention of erosion, and related water resources purposes. The study is scheduled for completion in 1984.

WEST BANK OF MISSISSIPPI RIVER, VICINITY OF NEW ORLEANS
(New Orelans District)

This study was initiated in 1966 to determine the advisability of providing additional hurricane protection for the area on the west bank of the Mississippi River at and below New Orleans. The study is scheduled for completion in 1978.

VERMILION RIVER AND BAYOU TECHE BASINS

VERMILION RIVER AND BAYOU TECHE BASINS

VERMILION RIVER AND BAYOU TECHE BASINS

Introduction

This area comprises the drainage basins of Vermilion River and Bayou Teche. The upper portion of the area is composed of alluvial ridges along Bayou Teche, prairies, and hills; and the lower portion primarily consists of coastal marshes. Navigation, flood control, municipal and industrial water supply, water-quality control, irrigation, recreation, and fish and wildlife are the purposes served by Corps of Engineers projects in the Teche-Vermilion Basins. Individual improvements are described in subsequent paragraphs.

Projects

BAYOU TECHE
(New Orleans District)

Authorized in 1934 and prior years, this project consists of a channel 8 feet deep and 80 feet wide from the mouth of the stream to New Iberia, thence 6 feet deep and 60 feet wide to Keystone Lock, and thence 6 feet deep and 50 feet wide on the bottom to Arnaudville, and a lock and dam.

The Keystone Lock and Dam was completed in 1913. All channel improvement work above Keystone Dam was completed in 1916. Channel improvement from the mouth to about 3 miles below New Iberia was completed in 1920.

An interim channel, 8 by 60 feet, was dredged along the 3-mile reach below New Iberia and an interim channel of 6 by 50 feet was dredged between New Iberia and Keystone Lock, a distance of approximately 17 miles.

The authorized project is about 71 percent complete. Cost of the existing project to date is $754,330. The uncompleted portion of the work is inactive.

Average annual traffic on this waterway, 1971-1975, was 612,618 tons. The major cargo in 1975 included marine shells, crude petroleum, and sugar.

BAYOU TECHE AND VERMILION RIVER
(New Orleans District)

This multiple-purpose project, completed in March 1957 at a cost of $2,891,922, provides improvements for navigation, flood control, and increased water supply for irrigation.

Specifically, the improvements consist of an 8- by 80-foot navigable channel from Vermilion Bay to the Gulf Intracoastal Waterway and a 9- by 100-foot channel from the Gulf Intracoastal Waterway to a fixed bridge located 400 feet south of the Southern Pacific Lines bridge at Lafayette. The act also

authorized improvement of the nonnavigable channel of Vermilion River (also called Bayou Vermilion) and Bayou Fusilier from Lafayette to Bayou Teche; enlargement of Bayou Teche from about Mile 103.8 (2 miles below Arnaudville) to Port Barre (Mile 124.8); and raising the crest of Keystone Dam to permit increased diversion of water from Bayou Teche through Ruth Canal to the Vermilion River. As a result of the flood of March 1947, which occurred when flood control improvements on Vermilion River were substantially complete, the Vermilion was further enlarged between the Gulf Intracoastal Waterway and Youngs Coulee, Mile 17.5. Enlargement of the channel necessitated the construction of new highway bridges at Woodlawn and Milton and the modification of numerous other bridges.

The project waterways provide excellent recreational sources and are extensively used for boating, waterskiing, and fishing. Bayou Teche, an abandoned course of the Mississippi River, is particularly attractive. Its well-sloped banks, wide meander bends, stately moss-draped oaks, and historical heritage attract visitors from all parts of the country. Evangeline State Park and New Iberia City Park are located on the bayou and add to its recreational allure. A project has been authorized (page 118, "Teche Vermilion Basins") which will alleviate a pollution problem currently experienced in low-water seasons. The Vermilion River provides numerous boating facilities; among them are the Lafayette Boat Club, the Vermilion Boat Club, and several marinas in the vicinity of Intracoastal City. Planning is in progress to further develop recreation and boating access to Bayou Teche and Vermilion River.

Cumulative benefits from flood damages prevented through June 1976 are estimated at $2,650,000. The average annual traffic from 1971-1975 was 1,319,818 tons. Crude petroleum, marine shells, and clay were the major cargoes in 1975.

BAYOU VERMILION
(New Orleans District)

This 5-1/2-foot channel from Vermilion Bay to Lafayette was completed in 1896 at a cost of $34,900. The project has been superseded by the navigation features of the Bayou Teche and Vermilion River project described above.

FRESHWATER BAYOU
(New Orleans District)

Freshwater Bayou Channel and Lock gives access to petroleum, gas, salt, and sulphur resources in the Gulf. The project is also a useful route for fishermen and trappers.

Consisting of a 12- by 125-foot waterway between the Gulf Intracoastal Waterway in the vicinity of Vermilion River and the Gulf of Mexico, the waterway generally follows the existing channels of Schooner Bayou Cutoff, Schooner Bayou, Sixmile Canal, Belle Isle Canal, and Freshwater Bayou. An 84- by 600- by 16-foot lock constructed in the vicinity of Beef Ridge near the Gulf of Mexico prevents saltwater intrusion. Jetties to the 6-foot depth contour are authorized if and when justified by excessive maintenance of the offshore channel.

Cost of existing project (except for construction of jetties at a later date, if necessary) was $7,116,224 Federal and $16,060 cash contribution. Estimated cost of construction of jetties (July 1971) is $3,118,100. Estimated non-Federal cost for the existing project is $171,000. In addition, the Coast Guard is to provide navigational aids at an estimated cost of $19,100.

Channel excavation between the Gulf Intracoastal Waterway and the lock site was completed in March 1965. The channel from the lock to the Gulf of Mexico was completed in October 1967. The lock and channel were opened to navigation in July 1968. In 1975, 291,070 tons of cargo traveled this waterway. The average annual traffic from 1971-1975 was 407,355 tons.

PETIT ANSE, TIGRE, AND CARLIN BAYOUS
(New Orleans District)

These waterways are used for access to fishing and hunting areas, and boating and skiing are

FRESHWATER LOCK

becoming more and more popular in the area. Average annual traffic on the project waterways from 1971-1975 was 1,579,010 tons.

Authorized in 1935, and modified in 1937, 1945, 1948, and 1960, the project currently provides for a 9- by 80-foot channel in Bayou Petit Anse from the Gulf Intracoastal Waterway to the north end of Avery Island; a 9- by 80-foot channel in Bayou Carlin from Bayou Petit Anse to Lake Peigneur; a harbor of refuge at Delcambre, Louisiana; and a 7- by 60-foot channel from the Gulf Intracoastal Waterway via McIlhenny Canal to deep water in Vermilion Bay. These improvements were completed in March 1962 at a Federal cost of $392,247. Mooring facilities have been constructed in the harbor of refuge by non-Federal interests.

This project was further modified in October 1976 under authority of Section 201 of the Flood Control Act of 1965. Modifications authorized included enlargement of Bayou Petit Anse from the entrance of the Avery Island Salt Mine Canal to the Gulf Intracoastal Waterway to 12 by 125 feet; enlargement of Bayou Carlin from Bayou Petit Anse to Lake Peigneur to 12 by 125 feet except within the town limits of Delcambre where the enlargement will be 12 by 80 feet; and replacement of the railroad bridge across Bayou Carlin at Delcambre with a vertical lift bridge to provide vertical clearance of 73 feet and horizontal clearance of 80 feet. Work on the modification has not yet begun.

PINHOOK BRIDGE
(New Orleans District)

Scour, caused by enlargement of the Vermilion River above and below the bridge, was threatening the stability of the bridge approaches. Bank protection works, consisting of degrading both banks and covering with riprap, were completed in 1950 at a cost of $25,287.

TECHE-VERMILION BASINS
(New Orleans District)

Authorized by the Flood Control Act of 1966, this feature provides for the diversion of supplemental water from the Atchafalaya River upstream of Krotz Springs to Bayou Courtableau just west of the West Atchafalaya Basin protection levee for municipal, industrial, irrigation, and water quality control uses in Bayou Teche, Vermilion River, and in the west side borrow pit along the West Atchafalaya Basin protection levee.

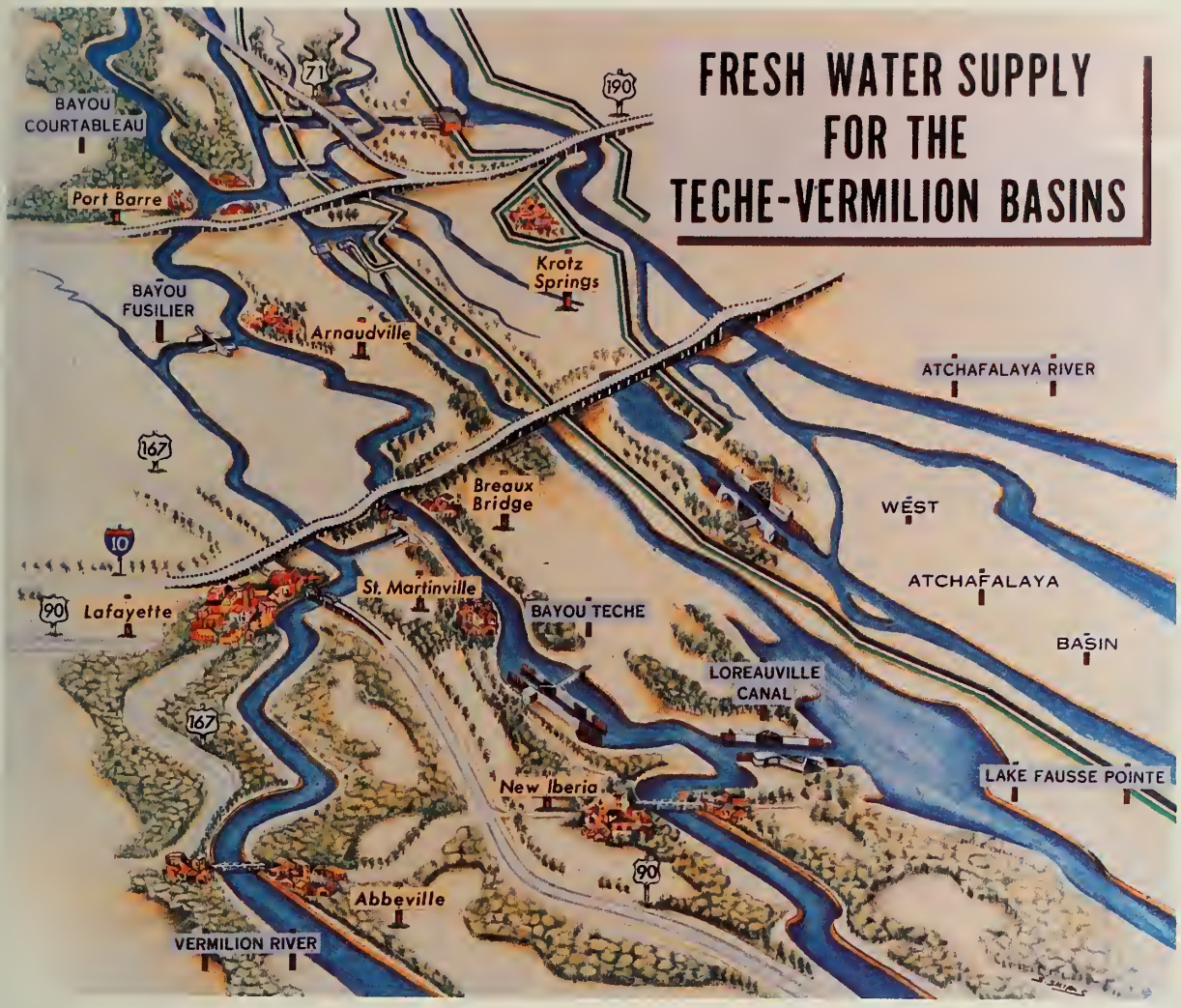
The initial improvements are to be constructed by the Federal Government at an estimated Federal cost (30 June 1976) of $18,900,000. The non-Federal cost is $730,000. The improvements include a 1,300-cubic-feet-per-second pumping station at the Atchafalaya River, a leveed conveyance channel with an inverted siphon under State Canal; a bridge at U. S. Highway 71; a control structure through the West Atchafalaya Basin protection levee; and three downstream control structures: a gated culvert between Bayou Courtableau and the West Atchafalaya Basin protection levee borrow pit to the south, a weir in Bayou Fusilier, and a navigable gate in Loreauville Canal (see illustration on page 119).

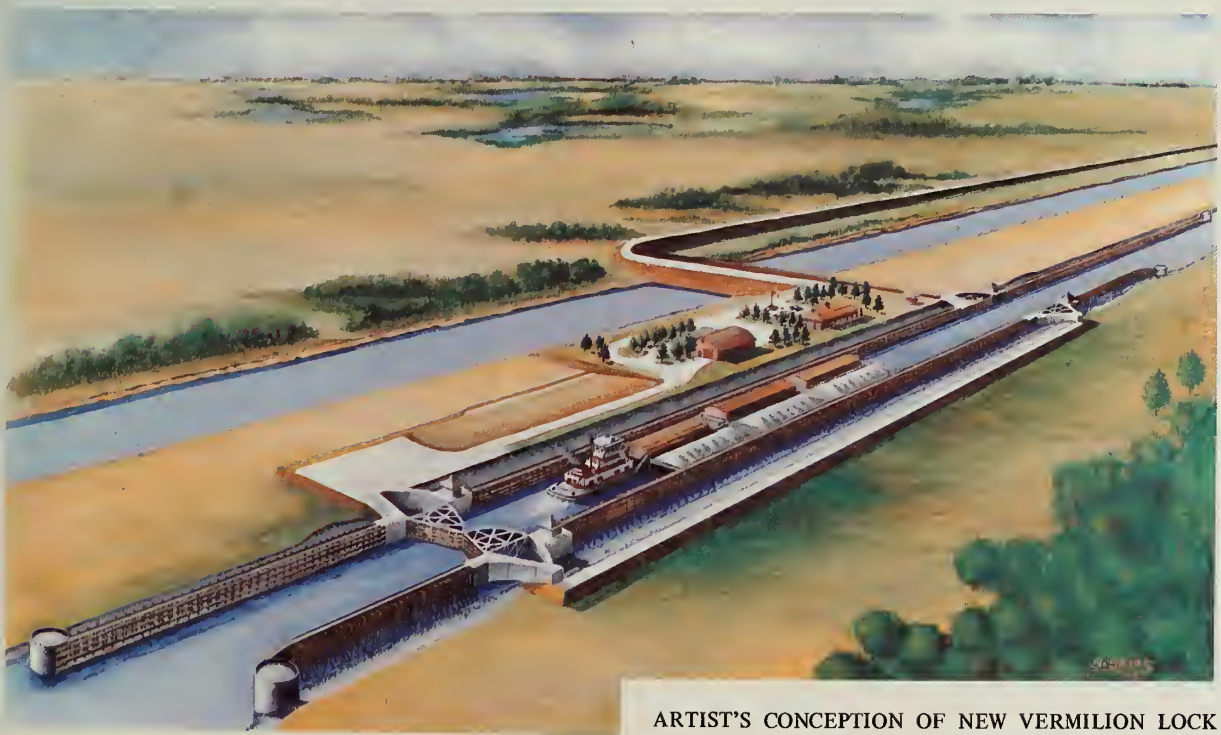
The three new control structures and the existing non-Federal Ruth Canal Control Structure are to be operated to distribute the supplementary water supply as needed. Operation and maintenance of the completed works and expansion of the pumping station from 1,050 to 1,300 cubic feet per second will be the responsibility of non-Federal interests. Construction was begun in 1976.

VERMILION LOCK
(New Orleans District)

Vermilion Lock is located in the Atchafalaya River-Sabine River section of the Gulf Intracoastal Waterway about 2 miles west of the Vermilion River. This lock is 1,182 feet long, 56 feet wide, with a depth over the sill of 11.3 feet below mean low Gulf datum. Because of its limitations of sill depth and width, the lock is a hindrance to navigation. Average

VERMILION LOCK





ARTIST'S CONCEPTION OF NEW VERMILION LOCK

annual traffic through the lock from 1971-1975 was 40,134,202 tons.

A replacement lock was approved by the Secretary of the Army in May 1967, under authority contained in Section 6 of the River and Harbor Act of May 1909. The new lock would be located just south of the existing waterway and just west of the existing lock. The authorized lock would be 75 feet wide, 1,200 feet long, and would have a depth over sill of 15 feet below mean low Gulf elevation.

In a restudy of the lock size, it was recommended that the width be increased from 75 to 110 feet to meet current demands. This new lock size was authorized in the Water Resource Development Act of 1976. Estimated costs for the replacement of Vermilion Lock are $20,600,000 Federal and $83,000 non-Federal. Construction of the new lock is tentatively scheduled to begin in late 1978.

Small Projects

SNAGGING AND CLEARING PROJECT

Under authority of Section 2 of the Flood Control Act of 1937, and subsequent modifications, 6.9 miles of Bayou des Cyprairres was cleared, snagged, and enlarged in 1953 at a cost of $42,498.

Flood Plain Information Reports

FRANKLIN
(New Orleans District)

A flood plain information report on the Franklin area initiated in 1976 has been suspended, and in lieu thereof, a flood insurance study for the city of Franklin has been initiated.

LAFAYETTE
(New Orleans District)

A flood plain information report on the Lafayette area was completed and published in September 1973 at a cost of $45,722.

The study area encompassed drainage from Vermilion River and tributaries beginning along Vermilion River at Mile 42 and continuing upstream to Mile 63. Most of the flooding in the area is due to headwater flooding, although high stages in the Vermilion River can cause backwater flooding.

SCOTT AND LAFAYETTE PARISH
(New Orleans District

A flood plain information report on the Scott area was completed and published in September 1974 at a cost of $40,000.

The study included the drainage area of Coulee Ile des Cannes and tributaries beginning with Coulee Ile des Cannes at its confluence with Vermilion River and continuing upstream to Mile 16. The report indicated that the area is subject to headwater and backwater flooding.

Flood Insurance Studies

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, the Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Vermilion River and Bayou Teche basins are listed below.

	Study Area
Completed:	None
Under Way:	Abbeville
	Baldwin
	Franklin

	Study Area
Under Way:	Jeanerette
	Lafayette
	Lafayette Parish
	Marksville
	St. Mary Parish

Surveys Authorized or Under Way

BAYOUS RAPIDES, BOEUF, AND COCODRIE AND OUTLETS (New Orleans District)

The study is investigating the advisability of additional improvements for flood control, drainage, and related purposes. Measures under consideration include modifications, extensions, or additions to existing flood control features. This study has been suspended pending completion of postauthorization studies on the Bayou Cocodrie and Tributaries project and Eastern Rapides and South-Central Avoyelles Parishes project. These projects will have a significant impact on flood control and drainage in the project area.

BAYOU SALE RIDGE (New Orleans District)

This study is to determine the advisability of modifying Bayou Sale from the Gulf Intracoastal Waterway to the Gulf of Mexico to improve flood control, drainage, and hurricane protection. The study has not yet been funded.

MERMENTAU RIVER BASIN

MERMENTAU RIVER BASIN

MERMENTAU RIVER BASIN

Introduction

This basin, located between the Teche-Vermilion and Calcasieu Basins, comprises a controlled system for the drainage of Mermentau River and its tributaries. Four structures, Catfish Point Control Structure, Schooner Bayou Control Structure, Calcasieu Lock, and Vermilion Lock, control the impoundment of winter runoff for irrigation use in the summertime. The upper portion of the basin consists of hills and prairies and the lower portion primarily consists of coastal marshes. Corps of Engineers projects in the basin, consisting primarily of navigation improvements, are described below.

Projects

BAYOU PLAQUEMINE BRULÉ
(New Orleans District)

The project provides for a channel 6 feet deep and 60 feet wide from the mouth to a point near Crowley, a distance of about 19 miles. The project was completed in 1915 at a cost of $33,410. In recent years the bayou has been cleared of snags and overhanging trees and the channel straightened by the State of Louisiana for flood control. Average annual traffic for the period 1971-1975 was 46,367 tons. Principal cargo on this waterway is crude petroleum.

BAYOU QUEUE DE TORTUE
(New Orleans District)

No channel dimensions are specified in this 14-mile channel project which provides for the removal of obstructions from the mouth of Bayou Queue de Tortue to the Southern Pacific Lines bridge at Riceville, and the dredging of 10 cutoffs. The project was completed in 1923 at a cost of $33,355. Maintenance and clearing and snagging were begun in June 1969. The controlling depth will be 5 feet mean low Gulf for the full project length. The average annual traffic over the waterway, 1952-1955, was 2,900 tons. No commerce has been reported since 1955.

INLAND WATERWAY FROM FRANKLIN TO THE MERMENTAU RIVER
(New Orleans District)

Completed in 1924, this waterway provides a 5- by 40-foot channel from Bayou Teche near Franklin through Hanson Canal, Bayou Portage, the Intracoastal Canal, Schooner Bayou Cutoff, Schooner Bayou, and a new land cut to White Lake; then through White, Turtle, Alligator, and Collicon Lakes and connecting channels; and finally through Grand Lake to the Mermentau River at the northern entrance to the lake. Total cost of construction was $249,100.

This project has been largely superseded by the "Intracoastal Waterway" project. The part of the project west of Vermilion River was incorporated into the "Mermentau River" project by the River and Harbor Act of 1946. Under authority of Public Law 85-837, the Hanson Canal and Lock were transferred to the Police Jury of St. Mary Parish in August 1959.

Average annual traffic on the waterway, 1959-1963, was 591,000 tons. Traffic since 1964 is included in the Mermentau River total.

MERMENTAU RIVER
(New Orleans District)

Work authorized under this project includes channel improvement of the Mermentau River below Grand Lake and existing channels between Grand and White Lakes and between White Lake and Vermilion Bay to provide channels with areas of 3,000 square feet below mean low Gulf level for floodflows; the construction of control structures in the enlarged channels near Grand Lake (at Catfish Point) and the Schooner Bayou Lock to prevent saltwater intrusion into the Mermentau Basin; the enlargement of Schooner Bayou Cutoff and North Prong of Schooner Bayou to provide 6- by 60-foot channels for navigation; and for the incorporation of the completed project, "Waterway from White Lake to Pecan Island," and that part of the completed project "Inland Waterway from Franklin to the Mermentau River," west of the Vermilion River. This project was completed in 1952 at a cost of $4,631,910.

The Catfish Point Control Structure has three sets of gates, each set having a width of 56 feet. The sill elevations of two sets are at 15 feet below mean low Gulf level, and the other set at 10 feet below mean low Gulf level. The Calcasieu and Vermilion Locks were completed in 1950 and 1933, respectively, under the navigation project, "Gulf Intracoastal Waterway Between Apalachee Bay, Florida, and the Mexican Border," described on page 145. These locks were constructed to prevent saltwater intrusion into the Mermentau Basin through the Intracoastal Waterway, and are operated in conjunction with the Schooner Bayou and Catfish Point Control Structures for regulation of the water

NAVIGATION ON THE GULF INTRACOASTAL WATERWAY

CATFISH POINT CONTROL STRUCTURE

SCHOONER BAYOU CONTROL STRUCTURE

levels in Grand and White Lakes. The gates of Schooner Bayou Lock, a feature of the incorporated portion of the "Inland Waterway from Franklin to the Mermentau River," were permanently closed and traffic routed through the control structure in 1951.

The cumulative benefits through June 1976 are estimated at $17,969,000 and are comprised of $17,021,000 (irrigation benefits), $1,448,000 (flood damages prevented), less $500,000 for estimated costs of delays to navigation at Calcasieu Lock. The average annual traffic from 1971-1975 was 1,316,924 tons.

MERMENTAU RIVER, AND BAYOUS NEZPIQUE AND DES CANNES (New Orleans District)

This project consists of removal of obstructions to navigation in the natural channel of the Mermentau River from its head at the junction of Bayous Nezpique and Des Cannes to the Gulf, a distance of about 71.5 miles; in Bayou Nezpique for the lower 25 miles; and in Bayou Des Cannes from its mouth to the Evangeline Bridge, a distance of about 8.5 miles; improvement of the channel in lower Mud Lake by dredging and by construction of a brush dam to concentrate the action of the current; removal of a portion of the wrecked dam at Mile 7; and a channel 9 feet deep at mean low Gulf level and 100 feet wide from the Intracoastal Waterway to the junction of Bayous Nezpique and Des Cannes.

The project was completed in 1935 at a cost of $58,000. Average annual traffic along this project, 1971-1975, was 911,930 tons.

Boating and skiing are popular activities along these waterways and facilities are maintained by the boat clubs of Jennings, Crowley, Eunice, and Lake Arthur. Preliminary plans for additional access and recreation facilities such as boat-launching ramps and picnicking areas have been completed and approved. Local cooperation is required for the implementation of these plans.

That part of the project in the lower Mermentau River below Grand Lake has been superseded by the project, "Mermentau River," described above. A modification of the project authorized under the River and Harbor Act of 1965 provides for the enlargement and realignment of Bayous Nezpique and Des Cannes to obtain a 12- by 125-foot channel from Interstate Highway 10 to the Mermentau River; realignment of the Mermentau River upstream of the Gulf Intracoastal Waterway by the construction of several cutoffs, each 12 by 125 feet; enlargement of the channel through Lake Arthur to 12 by 200 feet; and the replacement of the highway bridge at the town of Lake Arthur with a new structure having a vertical clearance of 50 feet and a horizontal clearance of about 200 feet.

The first contract was awarded in April 1974 at a cost of $279,000, for the construction of four cutoffs. During construction, archeological sites were discovered at two of the four cutoffs locations. Because of the value of these archeological sites, the Corps of Engineers altered the sequence of construction of the cutoffs and established a salvage program for the two cutoffs. In addition, the Corps is intensively surveying the remainder of the project area for other sites. Work on the first contract was completed in August 1974. The overall project is scheduled for completion in 1981. Estimated cost of the project modification as of 30 June 1976 was $7,156,000 Federal, including $51,000 for navigation aids, and $1,125,000 non-Federal.

A reimbursable contract for replacement of the highway bridge at Lake Arthur was signed by the Louisiana Department of Highways and the Corps of Engineers in December 1971. Bids for construction of the bridge were received by the Highway Department in March 1972. The cost of the bridge was $4,719,000 of which $3,912,000 is Federal cost. Work has been completed and the bridge was opened to traffic in April 1975.

WATERWAY FROM WHITE LAKE TO PECAN ISLAND (New Orleans District)

Authorized in 1937 and partially completed in 1939 at a cost of $10,900, this 1.8-mile project provides for a 5- by 40-foot channel from deep water

in White Lake to Pecan Island. The project was incorporated into the "Mermentau River" project by the River and Harbor Act of 1946.

Average annual traffic, 1959-1963, was 28,600 tons. Traffic is now included in the Mermentau River total shown on page 126.

Flood Plain Information Reports

CHURCH POINT
(New Orleans District)

A flood plain information report on the Church Point area was completed and published in June 1972 at a cost of $29,784.

The study area is limited to Bayou Plaquemine Brulé in the vicinity of Church Point from Mile 37 to Mile 44.5. The report provides information on the nature of flood problems, the flooding in the Church Point area, and the location of areas subject to possible future floods. The report serves as a basis for the adoption of land-use controls to guide flood plain development.

CROWLEY
(New Orleans District)

A flood plain information report on the Crowley area was completed in October 1974 at a cost of $35,000.

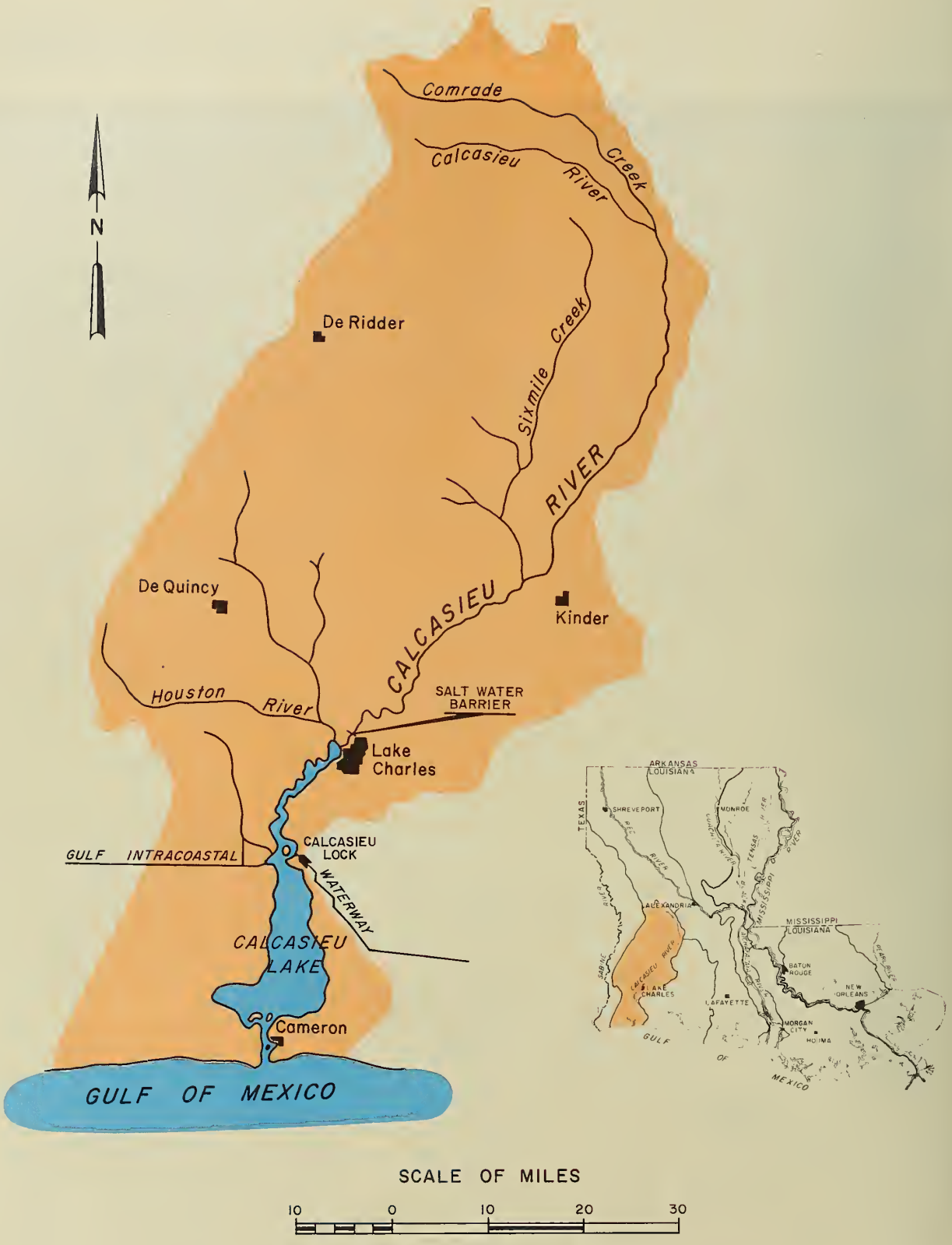
The study area comprises Bayou Plaquemine Brulé and tributaries from Mile 11.2 along Bayou Plaquemine Brulé upstream to Mile 20. The report indicates that the area is subject to headwater and backwater flooding.

Surveys Authorized or Under Way

MERMENTAU, VERMILION, AND CALCASIEU RIVERS, AND BAYOU TECHE
(New Orleans District)

This study is investigating the advisability of improvements or modifications to existing improvements in the interest of flood control, major drainage, navigation, water supply, water-quality control, saltwater intrusion, recreation, fish and wildlife, and other related water and land resources. An interim report recommending Federal assumption of the maintenance of the Mermentau River-Gulf of Mexico Navigation Channel was completed in June 1975. This assumption of maintenance was authorized by the Water Resource Development Act of 1976. Completion of the overall study has not been scheduled.

CALCASIEU RIVER BASIN



CALCASIEU RIVER BASIN

CALCASIEU RIVER BASIN

Introduction

This basin encompasses all the drainage area of Calcasieu River. The area is composed of hills and prairies in the upper portion of the basin, and coastal marshes along the lower extremity. The primary project feature is the Calcasieu saltwater barrier which was constructed to prevent saltwater intrusion in the Calcasieu River above Lake Charles. The various basin projects are described below.

Projects

BAYOU CHOUPIQUE
(New Orleans District)

Improvements consist of 2.7 miles of channel enlargement, 2.5 miles of diversion channel between the Gulf Intracoastal Waterway and Mile 7.5, and the construction of an automatic drainage gate in the diversion channel near its mouth to prevent saltwater intrusion into the bayou through the diversion channel.

This work was completed in May 1954 at a cost of $129,930. Cumulative benefits from flood damage prevented through June 1976 are estimated at $576,000.

CALCASIEU RIVER AND PASS
(New Orleans District)

This improvement consists of enlargement of a previous 35-foot ship channel to provide an approach channel 42 feet deep and 800 feet wide in the Gulf of Mexico; a channel 40 feet deep and 400 feet wide extending from the jetties at the mouth of the river to Lake Charles (Mile 34.3); enlargement of the existing turning basin at Mile 29.6 to a depth of 40 feet; construction of a mooring basin at Mile 3; extension of the existing ship channel (35 by 250 feet) upstream to U. S. Highway 90 (Mile 36.0), with a turning basin at the upper end; and maintenance of the existing 12- by 200-foot channel in the old bends of Calcasieu River to Cameron.

The 35-foot project was completed in 1953 at a total cost of about $7,800,000. The 40-foot modification was completed in 1968 at a cost of about $19,600,000, exclusive of $427,000 to the U. S. Coast Guard for navigation aids.

Average annual traffic over the waterway from 1971-1975 was 17,315,898 tons with crude petroleum, petroleum products, and chemicals accounting for the major portion of cargo. Below Lake Charles, the river serves primarily as access to fishing and hunting areas in adjacent lakes, bayous, marshes, and the Gulf of Mexico.

Above Lake Charles, the Calcasieu River provides excellent fishing and hunting. Private camps, picnic areas, and commercial recreational facilities are available from Phillips Bluff to Lake Charles.

SALTWATER GUARD BARRIER, CALCASIEU RIVER

CALCASIEU RIVER AND PASS SALTWATER BARRIER
(New Orleans District)

A modification of the Calcasieu River and Pass project, described above, was authorized by the River and Harbor Act of 1962 for construction of a barrier to prevent saltwater intrusion in the river above Lake Charles.

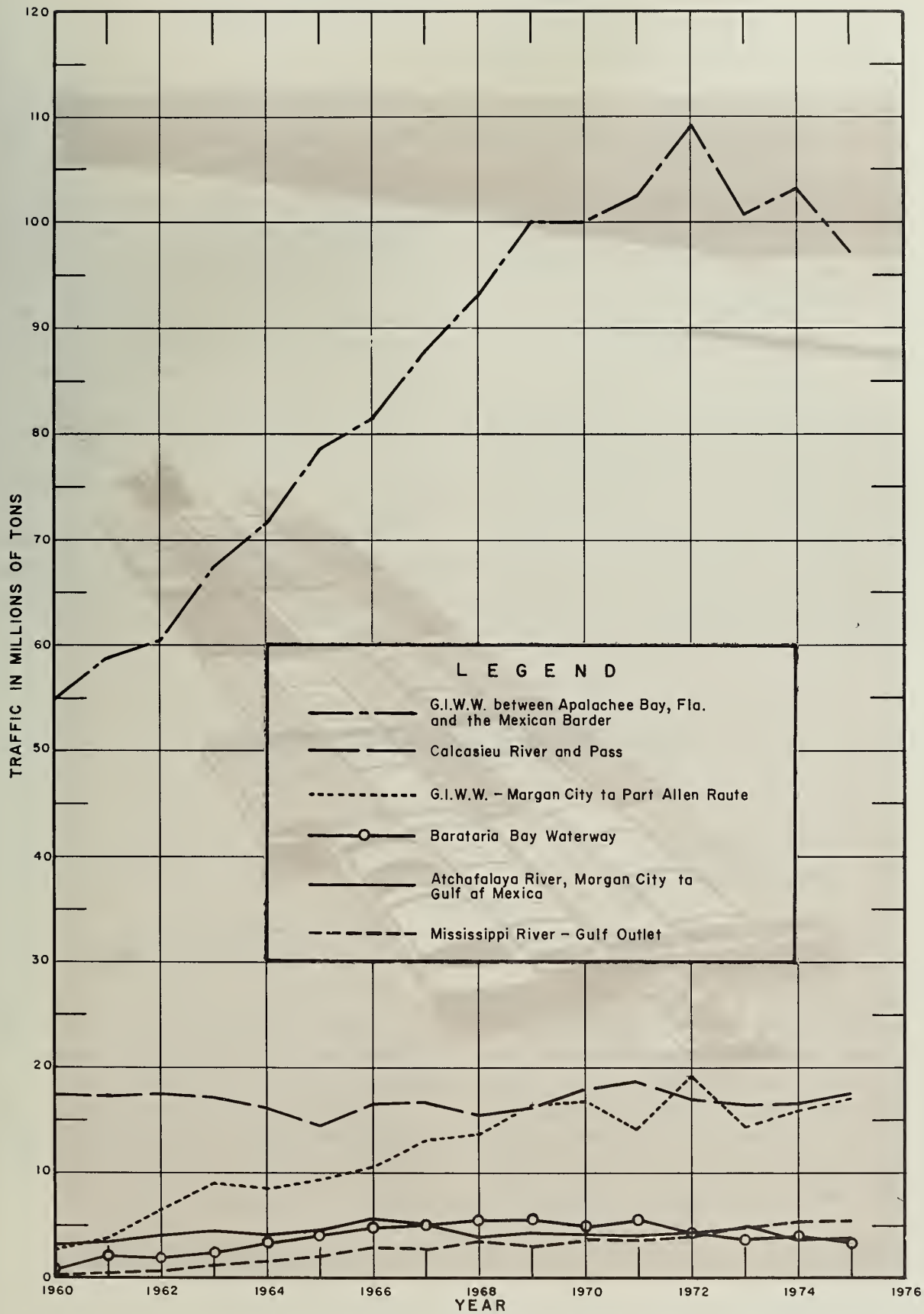
The project consists of a tainter gate structure in a new channel excavated across the narrow neck of land between Miles 38.6 and 43.5, an earth dam in the old channel at Mile 43.2, and bank revetment along the left bank of the existing channel between Miles 43.6 and 44.2 and along the left bank opposite the downstream end of the structure. A navigation channel with a gated structure 56 feet wide and sills 13 feet below mean low Gulf level is located north of the new barrier channel.

Construction of the barrier was initiated in 1965 and completed in January 1968 at a cost of $4,197,262.

CALCASIEU RIVER AT DEVIL'S ELBOW
(New Orleans District)

Authorized in 1970 under the provisions of Section 201 of the Flood Control Act of 1965, this project consists of enlargement and extension of the existing 12,000 feet of channel. The enlarged channel will match the current Calcasieu River ship channel dimensions of 40 by 400 feet and will extend into the industrial park to the vicinity of Louisiana State Highway 384. A 1,200- by 1,400-foot turning basin will be built at the landward end of the channel.

As a major port, Lake Charles, which is served by the Calcasieu River and Pass project, handled 17,462,574 tons of waterborne commerce in 1975. The Lake Charles Harbor and Terminal District is currently developing an industrial park at Devil's Elbow. Over $5 million has been spent for acquisition of 800 acres of land, a railroad spur track, and for construction of a 35-foot-deep ship



TRAFFIC ON MAJOR WATERWAYS

channel about 12,000 feet long. An aluminum plant has established in this area and efforts are being continued to attract other industries in locating within the park.

Estimated Federal cost of the project (30 June 1976) is $5,428,000 including $68,000 for the navigation aids. Non-Federal costs are estimated at $490,000. Detailed planning was initiated in fiscal year 1972 and construction was begun in 1976. The project is scheduled for completion in November 1977.

CALCASIEU RIVER AT COON ISLAND
(New Orleans District)

Authorized by Section 107 of the River and Harbor Act of 1960, as amended, the project provides for construction of a 40- by 200-foot ship channel and a 40- by 750- by 100-foot turning basin in Coon Island Channel. The Coon Island ship channel begins at its confluence with Calcasieu River and Pass ship channel and terminates opposite the northern end of Coon Island, a distance of 7,467 feet. Construction was initiated in July 1973 and completed in April 1974 at a cost of $959,400.

LAKE CHARLES DEEPWATER CHANNEL
(New Orleans District)

This project originally provided for Federal maintenance of the 30- by 125-foot channel constructed by local interests between the Calcasieu and Sabine Rivers, a distance of approximately 24.9 miles. However, the project is now inactive, since direct access from Lake Charles to the Gulf was provided by the "Calcasieu River and Pass Project," described on page 133.

This project coincides for its entire length with the Gulf Intracoastal Waterway under which maintenance to a 12-foot depth is accomplished as necessary.

All traffic over this waterway is barge traffic associated with the Gulf Intracoastal Waterway. Average annual traffic for the 1971-1975 period was 36,719,839 tons.

Flood Plain Information Reports

OAKDALE
(New Orleans District)

A flood plain information report on the Oakdale area was completed and published in August 1968 at a cost of $25,803.

The study area is limited to Calcasieu River in the vicinity of Oakdale, between approximately Mile 127 above the mouth and Mile 135. The study indicates that Oakdale is subject to headwater flooding from Calcasieu River. At the time the study was completed, no flood damage prevention measures had been taken in the study area or upstream in the watershed, nor were any authorized or proposed.

DEQUINCY
(New Orleans District)

A flood plain information report on the DeQuincy area was completed and published in September 1972 at a cost of $25,771.

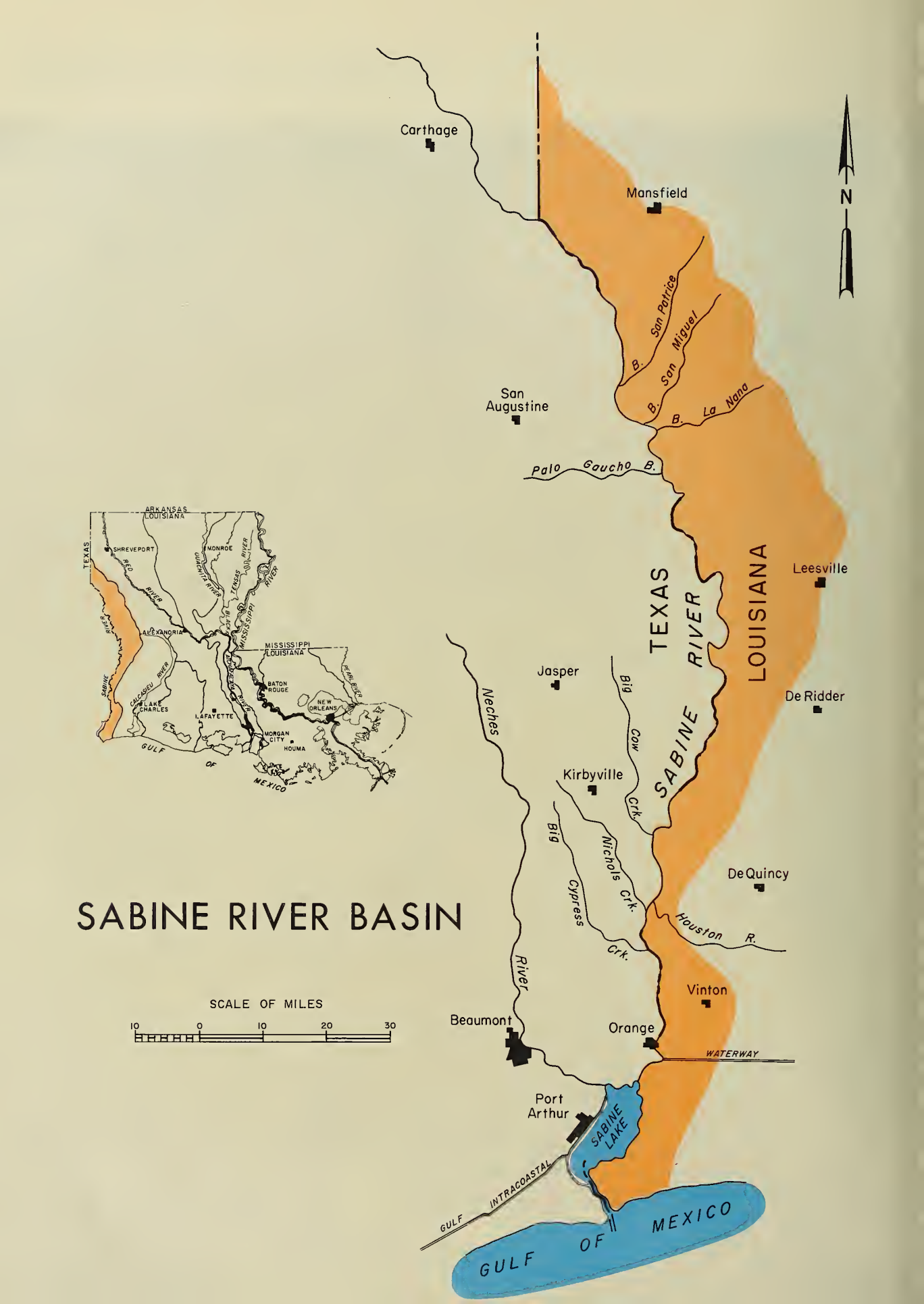
The study area comprises Buxton Creek and tributaries from Buxton Creek at Mile 12 upstream to Mile 12.5. The study area is subject to headwater flooding.

Flood Insurance Studies

Under the National Flood Insurance Act of 1968 (Public Law 90-448) and Flood Disaster Protection Act of 1973 (Public Law 93-234), which are discussed on page xx of the Introduction, the Corps of Engineers conducts flood insurance studies for HUD. Insurance studies that have been completed or are under way in the Calcasieu River Basin are listed to the right.

	Study Area
Completed:	Calcasieu Parish (Unincorporated Areas)
	Lake Charles
Under Way:	DeQuincy

SABINE RIVER BASIN


SABINE RIVER BASIN
Carthage
Mansfield
San Augustine
Palo Gaucho B.
B. San Patrice
B. San Miguel
B. La Nana
TEXAS
LOUISIANA
SABINE RIVER
Leesville
De Ridder
Jasper
Neches River
Big Cow Crk.
Kirbyville
Big Cypress Crk.
Nichols Crk.
De Quincy
Houston R.
Vinton
Beaumont
Orange
WATERWAY
Port Arthur
SABINE LAKE
GULF INTRACOASTAL
GULF OF MEXICO
N
SCALE OF MILES
10 0 10 20 30
ARKANSAS
LOUISIANA
TEXAS
SHREVEPORT
MONROE
RED RIVER
OUACHITA RIVER
TENSAS RIVER
MISSISSIPPI RIVER
ALEXANDRIA
MISSISSIPPI
LOUISIANA
SABINE RIVER
CALCASIEU RIVER
LAKE CHARLES
LAFAYETTE
ATCHAFALAYA RIVER
BATON ROUGE
NEW ORLEANS
PEARL RIVER
MORGAN CITY
HOUMA
GULF OF MEXICO

SABINE RIVER BASIN

Introduction

This basin, located in the western part of the State, is bounded by the State of Texas on the west and Calcasieu River Basin on the east. The basin encompasses all the drainage area of the Sabine River in Louisiana. The three completed Corps of Engineers navigation projects in Sabine River are described below.

Projects

JOHNSON'S BAYOU
(Galveston District)

This 6-foot-deep, 0.5-mile-long channel improvement of unspecified width from Johnson's Bayou through the bar in Sabine Lake was completed in 1899 at a cost of $2,262. This project is presently inactive. Average annual traffic on the waterway, 1971-1975, was 287,191 tons.

SABINE-NECHES WATERWAY, LOUISIANA AND TEXAS
(Galveston District)

Authorized in 1921, this project consists of the construction and maintenance of 85.0 miles of deep water and 8.7 miles of shallow-draft channels from the Gulf of Mexico through a jettied entrance at the mouth of Sabine Pass to the cities of Port Arthur, Beaumont, and Orange, Texas, via the Port Arthur Canal, Sabine-Neches Canal, and the Neches and Sabine Rivers.

Only that part of the improvement in Sabine River between Orange and Sabine Lake, and Sabine Lake and the Gulf is in Louisiana. The Sabine River portion of the Sabine-Neches deep draft waterway project extends from the mouth of the Sabine River at the north end of Sabine Lake through the Sabine River to Orange, a distance of 12 miles.

The existing authorized project provides for a channel 30 feet deep and 200 feet wide from the mouth of the Sabine River to the foot of Green Avenue at Orange, a maneuvering area at the entrance to the Orange Municipal Slip, a channel 30 feet deep and 200 feet wide from the Sabine River to the Orange Municipal Wharf, and a shallow-draft channel 12 feet deep and 125 feet wide from the foot of Green Avenue in Orange to Morgan Bluff, a channel length of 10.0 miles. Work to complete the Sabine River portion of the project consists of dredging the shallow-draft channel from Orange to Morgan Bluff at an estimated construction cost of $2,693,000. For additional information on the Orange to Morgan Bluff portion of the project, see similar pamphlet prepared for the State of Texas. Average traffic in the Sabine-Neches Waterway, 1971-1975, totaled 83,031,799 tons.

VINTON WATERWAY
(New Orleans District)

A 9-foot-deep and 60-foot-wide waterway from the Gulf Intracoastal Waterway via the Vinton Drainage Canal to a turning basin at Vinton was authorized in 1937. The estimated cost of the improvement is $56,000. Local interests have been unwilling to provide the necessary rights-of-way and excavated material disposal areas. No work has been performed to date. Average annual traffic on the waterway, 1971-1975, was 9,572 tons.

Surveys Authorized or Under Way

LOWER SABINE RIVER AND TRIBUTARIES, TEXAS AND LOUISIANA
(Fort Worth District)

This study is a review of existing reports on the Sabine River and Tributaries below Toledo Bend Reservoir to determine whether any modifications to the recommendations in these previous reports are advisable at this time.

Problems and needs of the lower basin such as flood control, hydropower, water supply, recreation, fish and wildlife, water quality, and navigation are to be addressed in this study.

The study was initiated in February 1976 and is scheduled for completion in 1981.

SABINE RIVER AND TRIBUTARIES, COMPREHENSIVE BASIN STUDY, TEXAS AND LOUISIANA
(Fort Worth District)

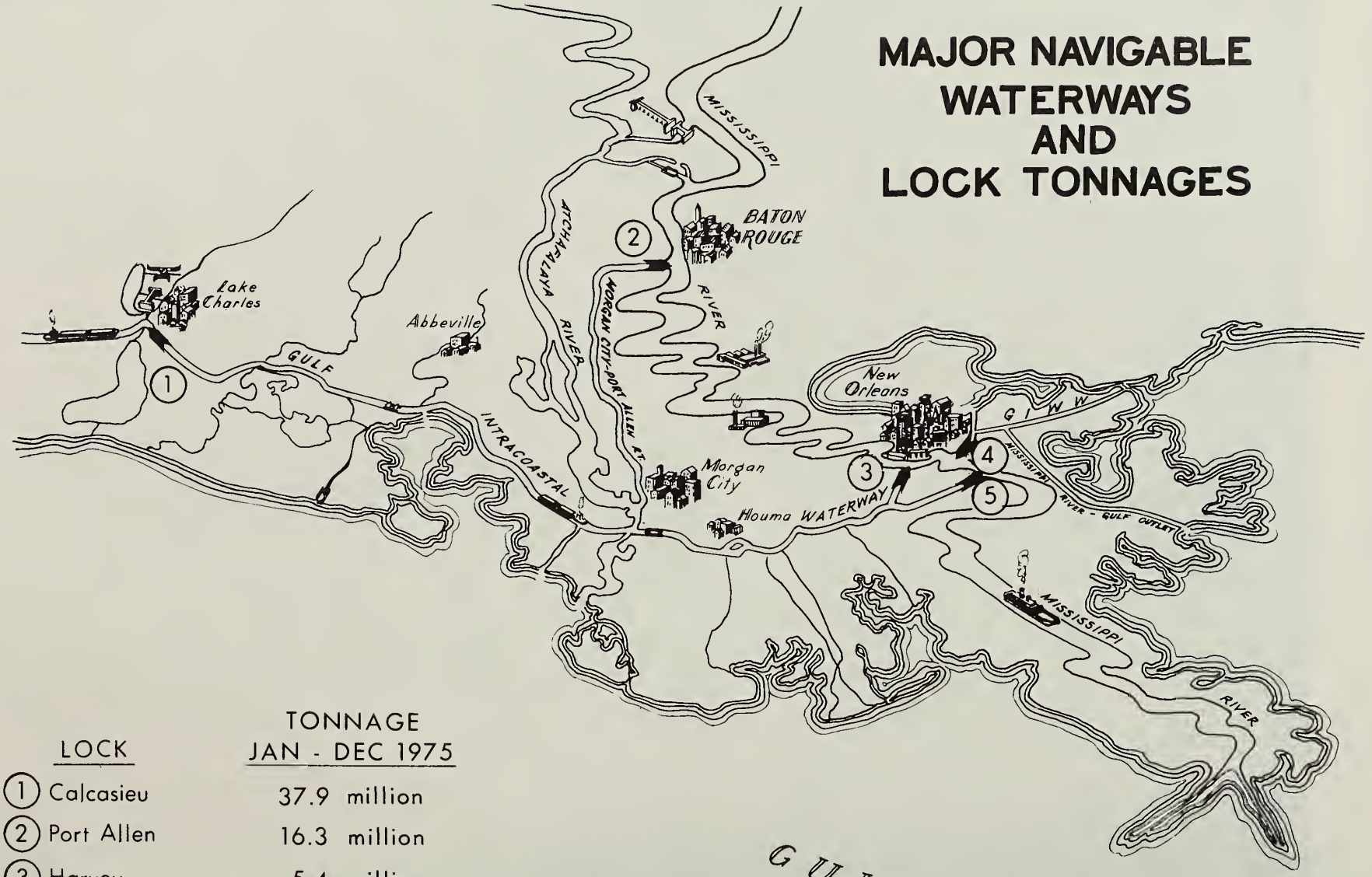
The objective of this study is to survey the water resource needs of the Sabine River and Tributaries Basin in Texas and Louisiana with particular reference to flood control, water supply, recreation, hydropower, fish and wildlife, water quality, and navigation.

The survey report recommended the following projects: (a) three multiple-purpose lakes in the upper basin—Lake Fork, Carl L. Estes, and Big Sandy Lakes, Texas; (b) a local flood protection project at Greenville, Texas; and (c) a shallow draft navigation channel from Echo to Morgan Bluff, Texas. This channel would be a sea level extension of the present authorized channel from Orange to Echo, Texas.

The study was completed in 1970.

COASTALWIDE PROJECTS

MAJOR NAVIGABLE WATERWAYS AND LOCK TONNAGES



LOCK	TONNAGE JAN - DEC 1975
(1) Calcasieu	37.9 million
(2) Port Allen	16.3 million
(3) Harvey	5.4 million
(4) Inner Harbor Navigation Canal	23.4 million
(5) Algiers	22.9 million

COASTALWIDE PROJECTS

Introduction

Corps of Engineers improvements that traverse several basins are included in this section. The primary feature is the Gulf Intracoastal Waterway which extends across the entire length of the lower portion of the State. Individual improvements are described below.

Projects

GULF INTRACOASTAL WATERWAY BETWEEN APALACHEE BAY, FLORIDA, AND THE MEXICAN BORDER (New Orleans District)

A series of Congressional Acts has authorized work which has progressively extended and enlarged the navigable channel to afford a practical coastal waterway route along the Gulf coast. Through the interconnection with the Mississippi River System and other important inland waterways, the Intracoastal Waterway enables small craft and commercial tows to reach many points throughout the eastern and southern seaboards, the Midwest, and the Great Lakes areas.

The description herewith will be limited to that part of the project located in the State of Louisiana. (For description of the remainder of the project, see similar pamphlets prepared for the States of Florida, Alabama, Mississippi, and Texas.)

The Intracoastal Waterway within the State limits extends along the coast of the Gulf of Mexico from Lake Borgne Light No. 29, the eastern boundary, to the Sabine River, the western boundary, a distance of 302 miles; from Port Allen to Morgan City, a distance of 64 miles; from Plaquemine to Indian Village, a distance of 7.4 miles; and to the town of Franklin via the Franklin Canal, a distance of 5.15 miles.

The project, as authorized by the River and Harbor Act of March 1925 and subsequent modifications through the River and Harbor Act of July 1946, provides for the following channel dimensions in the State of Louisiana:

1. Main routes: 12 by 150 feet from Lake Borgne Light No. 29 to the Industrial Canal, and 12 by 125 feet from the Mississippi River to the Sabine River, including the routes through both Algiers and Harvey Locks.

2. Alternate routes: 12 by 125 feet from Morgan City to the Mississippi River at Port Allen, and 9 by 100 feet from Plaquemine to Indian Village on the Morgan City-Port Allen Route.

3. Franklin Canal: 8 by 60 feet from its confluence with the Gulf Intracoastal Waterway to Franklin.

At present there are nine locks in operation on the waterway routes. Dimensions of these locks are shown in the table on page 148.

HARVEY LOCK

INDUSTRIAL CANAL LOCK

ALGIERS LOCK

PORT ALLEN LOCK

Locks	Size		Cost	Elevation of Sill Mean Low Gulf Level	Opened to Navigation
	Width feet	Length feet			
Berwick*	45	300	$ 2,100,000	-9.0	1951
Inner Harbor Navigation Canal (leased)	74	626	8,648,492	-31.5	1923
Harvey	75	415	1,775,132	-12.0	1934
Vermilion	56	1,182	330,765	-11.3	1933
Calcasieu	75	1,194	2,133,527	-13.0	1950
Algiers	75	760	5,215,700	-13.0	1956
Bayou Sorrel**	56	790	4,700,948	-14.0	1951
Bayou Boeuf**	75	1,148	2,754,000	-13.0	1954
Port Allen	84	1,188	13,902,222	-13.75	1961

* Tonnage is not available.
** Constructed and operated under the project, "Flood Control, Mississippi River and Tributaries."

The Berwick Lock was constructed to provide a navigation passage up the Lower Atchafalaya River to Patterson, Louisiana, and to Bayou Teche. The lock is a feature of the Atchafalaya River Basin and is described on page 36.

The Calcasieu and Vermilion Locks were constructed and are operated to prevent saltwater intrusion into the Mermentau River Basin. These locks are an essential part of the plan of improvement for "Mermentau River" described on page 126.

The Algiers Lock and Canal route begins 6 miles west of Harvey Lock on the existing waterway and extends to the Mississippi River below Algiers. The 9-mile channel and lock were completed in 1962, although they were actually opened to navigation in April 1956. Average annual traffic through Algiers Lock, 1971-1975, was 22,892,137 tons. Federal cost of the project route was $15,896,000 and non-Federal was $2,185,000.

The 64.1-mile-long alternate route from Morgan City to the Mississippi River, a new lock at Port Allen, and the channel in Bayou Plaquemine from Indian Village to the inoperative lock at Plaquemine were begun in February 1955 and completed in December 1962. The Port Allen Lock was opened to navigation in July 1961. In September 1961, the Plaquemine Lock on the channel from Indian Village to the Mississippi River was permanently closed. New bridges were constructed for the Texas and Pacific Railway crossing at Morley and Port Allen and for the Louisiana State Highway 1 crossing at Port Allen. Local interests constructed a highway bridge at Indian Village. Average annual traffic on the Morgan City-Port Allen Route, 1971-1975, was 16,158,395 tons. This modification was completed in October 1963 at a Federal cost of $26,869,000 and non-Federal cost of $2,250,000.

The bridge over the waterway, authorized at Paris Road at New Orleans, has been superseded by the larger bridge required at the same location for the Mississippi River-Gulf Outlet now completed (page 105).

An interim section of 8 by 50 feet was completed for the Franklin Canal in 1950 by the Federal Government. The canal was enlarged to project dimensions (8 by 60 feet) by local interests in 1953-1954.

All other work authorized through 1946 for this project except bulkheads and jetties at Lake Borgne and Chef Menteur has been completed. The bulkheads and jetties are not considered necessary at this time. Total cost of the new work in Louisiana under the existing project is $62,402,000 including $72,000 for navigation aids, and $14,830,000 non-Federal.

The average annual traffic, 1971-1975, on the waterway between Apalachee Bay and the Mexican Border was 103,153,741 tons.

The enlargement of the main channel west of the Mississippi River with a bypass south of Houma was authorized by the River and Harbor Act of October 1962.

Modification of the "Gulf Intracoastal Waterway Between Apalachee Bay, Florida, and the Mexican Border," authorized by the River and Harbor Act of 1962, consists of enlargement and realignment of the existing 12- by 125-foot channel between the Mississippi River at New Orleans and the Houston Ship Channel. The modification includes the following new channels in Louisiana:

1. A channel 16 feet deep and 150 feet wide between Mile 5 of the Harvey Canal west of Harvey Lock and the Atchafalaya River.

2. A channel 16 feet deep and 150 feet wide in the Algiers alternate canal.

3. A bypass channel 16 feet deep and 150 feet wide south of Houma with 58 percent of the cost of four bridges to be borne by the Federal Government.

4. A channel 16 feet deep and 200 feet wide between the Atchafalaya and Sabine Rivers.

No funds have been allotted to date for planning or construction of the modification. Acts of assurances of local cooperation from the 11 parishes through which the improvements traverse have not been furnished.

REMOVING WATER HYACINTH
(New Orleans District)

The water hyacinth which was introduced into the United States from Central or South America and exhibited at the 1884 Cotton Exposition in New Orleans, spread throughout southern Louisiana and Florida to such an extent that by 1898 the Congress was requested to intercede. The U. S. Army Engineers made a report in that year, and operations to control growth of this plant began in 1900.

From 1902 to 1937, the hyacinth was controlled entirely by treating with sodium arsenite. During the 35 years of control by sodium arsenite, operations were confined to about 300 miles of navigable waterways per year. Because of the hazards connected with handling and use, destruction by this chemical was abandoned in 1937 in favor of destruction by mechanical means. Since the late 1940's, use of the plant hormone 2,4-D gradually replaced mechanical destruction except in unusual cases. Efforts are constantly being made to improve the methods of plant control by testing new herbicides, equipment, and application techniques. Research is also being conducted to locate and develop biological control agents.

Removal of the hyacinth is a continuing project for which funds are appropriated annually. Authorized under the project is extermination or removal of plants which are or may become obstructions to navigation within the navigable waters of the States of Florida, Alabama, Mississippi, Louisiana, and Texas. The estimated annual cost for maintenance in Louisiana is $700,000.

There are presently 6,200,000 acres of water in Louisiana, of which it is estimated that 500,000 acres are infested by hyacinth, or are subject to infestation. With the completion of the Intracoastal Waterway, which connects many streams, the problem has been accentuated, and today operations are conducted in about 3,000 miles of waterway annually, as required.

Frequent checks are made on all of the waterways in the State to determine the existing conditions and to plan future operations. The control of aquatic vegetation has been achieved through: (a) control structures to prevent the drifting from infested areas into main waterway; (b) drifting the vegetation to salt water and self-destruction; (c) mechanical destruction by means of destroyers utilizing multiple semisubmerged saws to shred vegetation in place; and (d) chemical destruction of vegetation.

The work has been extended into many streams hitherto blocked to navigation, and the number of pleasure craft entering the newly opened areas has increased greatly.

Research to develop new methods of control or improve existing techniques has been carried on by the Corps continuously since 1934. The sum of $11,092,825 has been spent on this project in Louisiana by the U. S. Army Engineers since its inception.

AQUATIC PLANT CONTROL

AQUATIC PLANT CONTROL
(New Orleans District)

A review of the project, "Removing the Water Hyacinth," was authorized in 1945. The review report prepared by the U. S. Army Engineers in cooperation with the U. S. Department of Agriculture, U. S. Fish and Wildlife Service, and the U. S. Public Health Service has been published as House Document No. 37, 85th Congress, 1st Session. As a result of this study, Congress, on July 3, 1958, authorized a separate comprehensive project to control and progressively eradicate the water-hyacinth, alligator weed, and other obnoxious aquatic plant growths from the navigable waters, tributary streams, connecting channels, and other allied waters in the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas.

Amended by Public Law 89-298 in 1965 the project now includes the control and eradication of Eurasian water milfoil. All states are now included in the program.

Benefits from the project accrue to navigation, flood control, drainage, agriculture, fish and wildlife conservation, public health, and related water resources development purposes. Research for development of the most effective and economic control measures is an integral part of the project. The Corps is presently working with the Northwestern State University of Louisiana, the University of Southwest Louisiana, and the U. S. Department of Agriculture in addition to conducting its own research programs to effectively control aquatic vegetation.

The project is administered by the Chief of Engineers under the direction of the Secretary of the Army and in cooperation with other Federal and State agencies. Local interests are required to hold and save the United States free from claims that may occur from operations under the project and to participate to the extent of 30 percent of the cost of the program.

Total cost of the project under Public Law 89-298 is limited to $5,000,000 annually, allocated on a priority basis, depending upon the urgency and need of each area and the availability of local funds.

Planning work in Louisiana was initiated in May 1959. Corps of Engineers crews work in the larger streams and the Louisiana Wild Life and Fisheries Commission crews carry operations beyond this point into the feeder areas and lakes in north Louisiana.

Work in Pearl River Basin (Mobile District) is carried out under the expanded program by the Wild Life and Fisheries Commission which is under contract with New Orleans District. Additional work which can be done effectively by the State crews is assigned on a cost reimbursable basis, depending on the availability of funds.

As a result of this work, recreation activities along the many waterways in Louisiana have

increased greatly. New channels to pleasure spots have been made available for general public use. The sum of $6,555,352 has been spent on this project in Louisiana by the U. S. Army Engineers.

Emergency Projects

FLOOD FIGHT, 1975
(New Orleans District)

In the first few weeks of January 1975 and for the third consecutive year, the possibility of serious high-water conditions occurring along the Lower Mississippi River later in the spring became evident once again by the all too familiar behavior of the river and its rising stages. The New Orleans District therefore began preparations in anticipation of the high-water threat.

Thus, because of the extended period of intermediate to high river stages on the Mississippi River, wave-wash damage to levees under construction below New Orleans in Plaquemines Parish, and forecasts for continuation of rising river stages, partial mobilization was ordered on 14 March 1975 in the MR&T project area in the New Orleans District.

To protect levees under construction (some 67 miles), immediate installation of wave-wash protection was begun by construction of vertical board revetments and placement of shell-filled bags and riprap.

The District went into full mobilization on 28 March 1975.

Approximately 14.3 miles of Mississippi River levees were raised 0.5 to 3.5 feet by placement of sandbags. A total of 7,500 feet of emergency mudboxes were constructed for additional freeboard at the Louisiana Street Wharf in New Orleans and St. Francisville Casting Yard. Vertical board revetments were completed at Gravolet, Carlisle, and Phoenix, Louisiana, along 12,500 feet of levee to prevent wave-wash erosion. About 175,000 tons of riprap were placed along 28 miles of levee for foreshore protection and slope protection restoration.

Approximately 70 miles of the Atchafalaya Basin protection levee were scheduled to be raised 0.5 to 2.0 feet by the construction of a "potato

FLOOD PROTECTION PROVIDED BY MUDBOXES AS AN EMERGENCY MEASURE

EROSION PREVENTED BY USE OF BOARD REVETMENT

ridge" to allow for additional freeboard. Much of this work was started but was not carried to completion. A vertical board revetment 1,400 feet in length was constructed in the vicinity of Berwick to prevent wave-wash erosion. At Morgan City, Berwick, and Tiger Island, the old existing mudboxes were removed and new ones constructed. Emergency gate raising at several structures was also accomplished.

In addition to the work completed by contract, approximately 25,000 tons of riprap were placed along the Mississippi River levees including 135,000 cubic yards of shell and gravel requisitioned for spreading on levee crowns and/or stockpiling in both the Mississippi River levee and Atchafalaya River Basin levee areas.

On 14 April 1975, based on a gage reading of 17.8 feet mean sea level (msl) and a predicted crest by National Weather Service of 19.5 feet msl at Carrollton gage, Bonnet Carré Spillway was opened for the fifth time in its history. A total of 225 bays were opened by 16 April 1975, then further openings were discontinued due to falling river stages.

On 17 April 1975, gradual closure of Bonnet Carré Spillway began and was completed by 26 April 1975. The structure was operated for 13 days and maximum recorded flow was 134,000 cubic feet per second on 16 April 1975 with 225 bays opened.

Due to improved conditions and predicted river stages all levee raising contracts in the Atchafalaya Basin were terminated by 23 April 1975 with all work approximately 47 percent complete.

A total of $17.5 million was expended under authority of Public Law 84-99 during fiscal year 1975.

BONNET CARRÉ BEING OPENED

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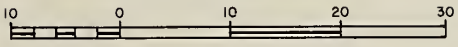
SCALE OF MILES



30 JUNE 1976

U.S. ARMY CORPS OF ENGINEERS

ESSAYONS

PROJECTS COMPLETED

NAVIGATION PROJECTS

D4 Amite River & Bayou Manchac (1)
C5 Atchafalaya River, Morgan City to Gulf of Mexico (2)
E5 Barataria Bay Waterway (3)
E6 Bayou Bonfouca (4)
E4 Bayou Dupre (5)
C5 Bayou Grosse Tete (36)
B4 Bayou Lacombe (6)
E4 Bayou Petit Caillou, Sc. Malo, and Terrebonne (7)
B4 Bayou Plaquemine Brule (8)
B4 Bayou Sorrae de Tortue (9)
D4 Bayou Segnette (109)
C5 Bayou Teche (39)
B4 Bayou Teche & Vermilion River (10)
E5 Bayou Terre Aux Boeufs (108)
D4 Bayou Treasureume (11)
B4 Bayou Vermilion (12)
A4 Calcasieu River & Pass (13)
a. Lake Charles Section
b. Saltwater Barrier
A4 Calcasieu River in Grom Island, La. Ship Channel (119)
D3 Chefuncte River & Bogue Falls (14)
A1 Cypress Bayou and W W between Jefferson, Tex. and Shreveport, La. (15)
B4 Freshwater Bayou (40)
D4 Gulf Intracoastal Waterway
Between Apalachee Bay, Fla. & Anclote River (16)
C4 a. Morgan City to Port Allen Route
b. Algiers Lock & Canal
C4 c. Franklin Canal
D5 Houma Navigation Canal (17)
B4 Inland Waterway from Franklin to Normentau River (22)
A4 Johnsons Bayou (18)
A4 Lake Charles Deep Water Channel (19)
C1 Lake Providence Harbor (20)
D5 Little Caillou Bayou (21)
B4 Mermentau River (23)
B4 Normentau River, Bayou Nezpique & Bayou des Cannes (9-foot project) (24)
C6 Mississippi River, Baton Rouge to Gulf of Mexico (42)
E4 Mississippi River-Gulf Outlet
Michoud Canal (105)
C2 Ouachita & Black Rivers, Ark. & La. (26)
D4 Pearl River (27)
E3 Pearl River (112)
A1 Pearl River Waterway, Miss. and La. (28)
C4 Petit Anse, Tigre & Carlin Bayous (29)
A2 Red River below Fulton, Ark. (28)
D3 Tangipahoa River (29) (110)
D3 Tickfaw, Natalbany, Ponchatoula, & Blood Rivers (30)
E5 Waterway from Empire, La. to the Gulf of Mexico (31)
B4 Vermilion River (32)
D5 Waterway from Intracoastal Waterway to Bayou Dulac (32)
B4 Waterway from White Lake to Forse Island (22)

FLOOD CONTROL PROJECTS

B2 Aloha-Bigelotte Area, Grant and Rapides Parishes (46)
D4 Amite River and Tributaries (47)
A1 Bayou Bodcau, Red Chute, and Loggy Bayou (49)
A1 Bodcau Lake (48)
A1 Bayou Choupique (50)
A2 Bayou Nicholas and Coushatta (51)
A1 Bayou Pierre (52)
A1 Bayou Pierre in Vicinity of Shreveport (52)
B2 Bayou Rapides (54)
C2 Big Choctaw Bayous (55)
A1 Black Bayou - Pine Island Area (56)
A1 Caddo Dam Replacement (57)
A2 Campti-Clarence Area (58)
A1 East Point (69)
C2 Grand Cane Bayou (60)
D4 Lake Ponchartrain and Vicinity (Hurricane Protection) (77)
B2 Natchitoches Parish (66)
B1 Ouachita River & Tributaries, Ark. & La. (59)
B1 a. Columbia
B1 b. Monroe Floodwall Extension
B2 Pineville (60)
A1 Red River Parish (61)
A1 Red River, Vicinity of Shreveport (62)
B2 Saline Point (63)
A1 Twelvemile Bayou (64)
A1 Wallace Lake (65)

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

FEATURES OF PROJECT

C4 Atchafalaya Basin Floodway (81)
C4 a. Atchafalaya Basin Levees
C3 b. Atchafalaya River Impr. Dredging
C4 c. Atchafalaya River (Nav.)
C4 d. Bayou Boeuf Lock
C4 e. Bayou Sorrel Lock
C4 f. Berwick Lock
C4 g. Morgan Floodgate
C4 h. East Access Channel
C4 i. East Freshwater Distribution Channel
C4 j. East & West Calumet Floodgates
C4 k. Raising T. & S.D. Ry. Bridge at Berwick (98)
C4 m. Wax Lake Outlet
C4 n. West Access Channel
C4 o. West Freshwater Distribution Channel
C3 Baton Rouge Harbor (Navigation) (83)
B3 Bawcomville (111)
D4 Bonnet Carre Floodway (82)
C5 East Atchafalaya Basin Protection Levee Landside Drainage Improvement (83)
C4 a. Bayou Boeuf-Bayou Long Drainage Channel & Enlgt. of Bayou Chene
C4 b. Lyntte to Bayou Chene Outfall Canal
C1 Filling Crevasse (86)
C2 Harrisonburg to Little River Levees (85)
C2 Jonesville (86)
D4 Lake Ponchartrain (87)

C1 Morganza Floodway (88)
C3 a. Control Structure
C3 b. N.O.T. & N.R.R. High Level Crossing
C3 c. Pointe Coupee Drainage Structure & Enlgt. Bayou Lavanache Drainage Canal
C3 d. T. & P. Ry. High Level Crossing
C3 e. U.S. Hwy. No. 190 High Level Crossing
C3 Old River (99)
C3 a. Low-Sill Control Structure
C3 b. Overbank Control Structure
C3 c. Old River Navigation Lock
C3 d. Lower from Black Hawk to Torras
C4 West Atchafalaya Basin Protection Levee, Landside Drainage (89)
C4 a. Bayou Boeuf Drainage Canal
C4 b. Bayou Courtableau Diversion Channel & Control Structure
C3 c. Bayou Courtableau Drainage
C4 d. Bayou Des Glaises
C3 d. Bayou Verdunise Drainage Structure
C3 e. Bayou des Glaises Culvert
C3 f. Bayou des Glaises Diversion Channel
C4 g. Channel Impr. Cypremort to Sunnyside
C3 h. Borrow Pit Enlgt., Nasburg to Courtableau
C4 i. Charenton Drainage Canal
C5 West Atchafalaya Floodway (90)
C3 a. N.O.T. & N.R.R. High Level Crossing
C3 b. Dpt. Highway Pigeon-Bunkie
C3 c. N.R.R. Crossing
C3 c. U.S. Hwy. No. 190, High Level Crossing

B2 Aloha-Bigelotte (Red River) Area, Louisiana
C5 Atchafalaya Basin (Water and Land Resources)
D4 Barataria Bay Waterway - Dupre Cut
C4 Barataria Bay Waterway - Entrance Channel
D4 Bayou Barataria - Bayou Perot
E4 Bayou Bonfouca
D4 Bayou Chevreuil
D5 Bayou Grand Caillou
D5 Bayou Lafourche and Lafourche Jump Waterway
D4 Bayou Manchac and Amite River
D4 Bayou Segnette, Bonnet, and Coiodrie and Outlets
B4 Bayou Teche
C4 Berwick Lock, Atchafalaya River Basin, Walnut Roundaway Bayou and Wax Lake Outlet - Charenton Area
E3 Gulf Coast Deep Water Port Facilities, Tex., La., Miss., Ala., and Fla.
B4 Gulf Intracoastal Waterway, Louisiana and Texas
D4 Gulf Intracoastal Waterway - Louisiana Section - High Level Highway Crossing
D4 Lake Ponchartrain, Jefferson Parish
E4 Lake Ponchartrain, North Shore
D4 Lake Ponchartrain, West Shore
D4 Lake Providence Harbor
C1 Larto Lake - Saline Lake
C1 Louisiana State Capitol
C1 Louisiana State Penitentiary Levee, Mississippi River
D5 Lower Mississippi Region Comprehensive Study
A1 Lower Sabine River and Tributaries, Texas and Louisiana
B4 Mermentau Vermilion, and Calcasieu Rivers and Bayou Teche
D4 Mississippi and Louisiana Estuarine Areas
C3 Mississippi River, Baton Rouge to Natchez, Miss.
D4 Mississippi River, Gulf Outlet, Louisiana
E4 Mississippi River - Gulf Outlet
D4 New Orleans-Baton Rouge Metropolitan Area, Louisiana
B1 Ouachita River Basin
C3 Red River Below Mississippi and Louisiana
A1 Red River Below Denison Dam - Authorizing Reports
A1 Red River Below Denison Dam Comprehensive Basin Study, La., Ark., Okla., and Tex.
A4 Sabine River and Tributaries Comprehensive Basin Study, Texas and Louisiana
A1 Wallace Lake
D4 West Bank of Mississippi River Vicinity of New Orleans

PROJECTS UNDER CONSTRUCTION

NAVIGATION PROJECTS

C5 Atchafalaya River and Bayous Chene, Boeuf and Black (103)
D5 Bayou Lafourche & Lafourche Jump Waterway (37)
D4 Bayou Segnette Waterway (38)
A4 Calcasieu River at Devil's Elbow (116)
Channel Improvement for Plant Control (--)
B4 Mermentau River, Bayou Nezpique & Bayou des Cannes (12-foot project) (23)
C5 Mike. River, Baton Rouge to Gulf of Mexico (41)
C3 Overton-Red River Waterway Lower 31 Miles (44)
A1 Emergency Bank Protection-Red River (113)
A2 Red River Waterway, La., Texas, Arkansas and Okla. (105)
C2 a. Mississippi River to Shreveport, La. - Removing the Water Hyacinth in La. (--)
A4 Sabine-Neches Waterway, La. & Tex. (30-foot project) (43)

FLOOD CONTROL PROJECTS

A1 Bayou Bodcau and Tributaries (73)
A1 Brush Bayou (120)
C3 Choctaw Bayou (107)
D4 Harvey Canal-Estrella Levee (76)
E4 Lake Pontchartrain & Vicinity (Hurricane Protection) (77)
D5 Larose to Golden Meadow (Hurricane Protection) (75)
C4 Morgan City and Vicinity (Hurricane Protection) (78)
E5 New Orleans to Venice (Hurricane Protection) (70)
C2 Ouachita River & Tributaries, Ark. & La. (59)
C2 e. Ouachita River Levee
A1 Red River Below Denison Dam, La., Ark., Okla., & Tex. (71)
B2 Red River Levee & Bank Stabilization below Denison Dam, Tex., Ark., and La. (114)
C4 Teche-Vermilion Basins (124)

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

FEATURES OF PROJECT

C4 Atchafalaya Basin Floodway (81)
C4 a. Atchafalaya Basin Levees
C4 p. Main Channel Impr. Dredging
C3 Atchafalaya Basin Bank Stabilization (116)
C3 Baton Rouge Harbor (Navigation) (83)
B3 Barnes Goodwin and Trib. (91)
C1 Tensas, Cocodrie, Boeuf and Tensas Rivers, etc., Ark. and La. (94)

B3 Lower Red River (95)
C1 Mississippi River, Cairo, Illinois, to Baton Rouge (96)
C2 Mississippi River Channel Improvement (97)
C1 a. Bank Stabilization Works
C2 b. Dikes and Dredging
D4 Mississippi River Levees (98)
C3 Tensas Basin, Red River Backwater Area (100)
C3 a. Tensas-Cocodrie Area
C3 b. Larto Lake to Joinesville Area
C3 Old River (99)
C3 a. Bank Stabilization

Flood Plain Information Reports Completed or Underway

C3 Baton Rouge No. 1
C3 Baton Rouge No. 2
C3 Baton Rouge No. 3
C3 Baton Rouge No. 4
C3 Bogalusa
C3 Bunch Point
D3 Covington
E4 Crowley
A1 Dewhitey
A1 Gibsland
D4 Gonzales
C4 Lafayette
B1 Monroe
B1 Oakdale
C3 Rayville
C4 Scott & LaFayette Parish
A1 Shreveport No. 1
A1 Shreveport No. 2
A1 Shreveport No. 3
B4 Slidell
B1 West Monroe
C1 Vicksburg

PROJECTS NOT STARTED

NAVIGATION PROJECTS

C3 Bayou Grosse Tete (Inactive) (36)
C4 Bayou Teche (Inactive) (39)
D4 Gulf Intracoastal Waterway between Apalachee Bay, Fla., & the Mexican Border (1962 modifications) (16)
E5 Mississippi River Outlets, Venice (104)
E3 Pearl River Waterway La. and Miss. (Inactive) (28)
A1 Red River Waterway, La., Tex., Ark., and Okla. (105)
B4 Vermilion Lock (106)
A4 Vincent Waterway (45)
C4 Petit Anse, Tigre & Carlin Bayous (27)

FLOOD CONTROL PROJECTS

C1 Bayou Bartholomew, Including Doop Bayou and Overflow Creek, Ark. and La. (121)
A1 West Ouachita Levee (122)
E5 Grand Isle Beach Erosion (123)

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

FEATURES OF PROJECT

C3 Atchafalaya Basin Floodway (81)
C3 r. Bayou Courtableau Freshwater Diversion Structure and Channel
C3 s. Sherburne Freshwater Diversion Structure and Channel
B3 Eastern Rapides, South Central Avoyelles Parishes (115)
E4 Mississippi Delta Region (114)

C1 Morganza Floodway (98)
C1 f. Additional Drainage Facilities Upper Pointe Coupee Loop Area, La.
C2 Tensas Basin, Red River Backwater Area (100)
C2 a. Tensas-Cocodrie Area
C2 b. Birdy Island Area
C3 c. South of Red River Area
C3 d. Larto Lake to Joinesville Area
C3 e. Harrisburg to Little River
C1 Techo-Vermilion Basins (104)
A1 Tensas Basin, Boeuf and Tensas Rivers, etc., Ark. and La. (94)

Flood Hazard Information Reports Completed or Underway

A1 Bayou Benoit
A1 Big Black Bayou
B1 Black Bayou
A1 Brush Bayou
B1 Concordia Parish
B1 Fort of Lake Providence
A1 Sand Beach Bayou

Flood Insurance Studies Completed or Underway

C4 Abbeville
B5 Alexandria
D4 Ascension
D4 Ascension Parish (West Bank)
C4 Baldwin
C4 Baton Rouge, East Baton Rouge, and Baker
C4 Berwick
A4 Calcasieu Parish (Unincorporated areas)
B2 Caldwell Parish
C2 Clayton
B3 Colfax
B2 Columbia
C2 Concordia Parish
B3 DeSoto
C4 Donaldsonville
C3 East Baton Rouge Parish
C4 Franklin
C4 Franklin
D4 Gonzales
D4 Gramercy
D4 Gretna
D4 Hahnhan
D4 Harvey-Gretna
D4 Homma
C4 Jeanerette
D4 Jefferson Parish Type 19
D4 Jefferson
C4 Lafayette
C4 Lafayette Parish
D4 Lafourche Parish
A4 Lake Charles
D4 Lockport
D5 Louisiana Gulf Coast
D4 Luther
D3 Mandeville
C4 Marksville
C3 Melville
D4 Metairie
B5 Minden
C4 Morgan City
E4 New Orleans (Inner Harbor Area)
D4 Orleans Parish Type 19
B1 Ouachita Parish
C4 Patterson
E5 Plaquemines Parish
B2 Rapides Parish
E4 Remainder of Orleans Parish
C2 Ridgecrest
E4 St. Bernard Parish, Area No. 1
Orleans-St. Bernard Parish Line to Violet
E4 St. Bernard Parish, Area No. 2
Violet to Verret
E4 St. Bernard Parish, Area No. 3
Orleans-St. Bernard Parish Line to Violet
E4 St. Bernard Parish Type 19
D4 St. John the Baptist Parish
C4 St. Mary Parish
C3 Simmesport
D4 Sorrento
C3 Tensas Parish
C2 Terrebonne Parish
D4 Thibodaux
D3 Vidalia
B1 West Monroe
D4 Westwego
C1 Winnsboro

AUTHORIZED FEDERAL PROJECTS

	COMPLETED	UNDER CONSTRUCTION	NOT STARTED
Reservoir			
Control Structure			
Lock			
Waterway			
Authorized channel complete			
Channel complete under previous project and incomplete under existing project			
Channel Improvement			
Levee			
Pumping Station			

LEGEND

- Navigation project
- Flood control project
- Navigation and Flood control project
- (S) Survey authorized or underway
- FPI Flood Plain Information report completed or underway
- FHI Flood Hazard Information report completed or underway
- FIS Flood Insurance Study completed or underway

Features of flood control, Mississippi River and tributaries project

- Flood control
- Navigation

PROJECTS IN LOUISIANA

U.S. ARMY CORPS OF ENGINEERS

SCALE OF MILES

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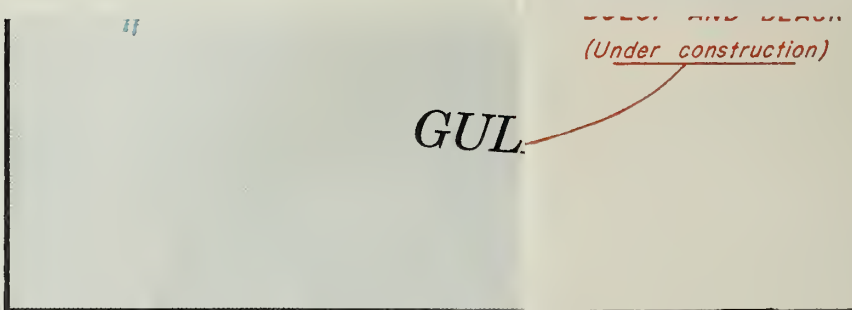
30 JUNE 1976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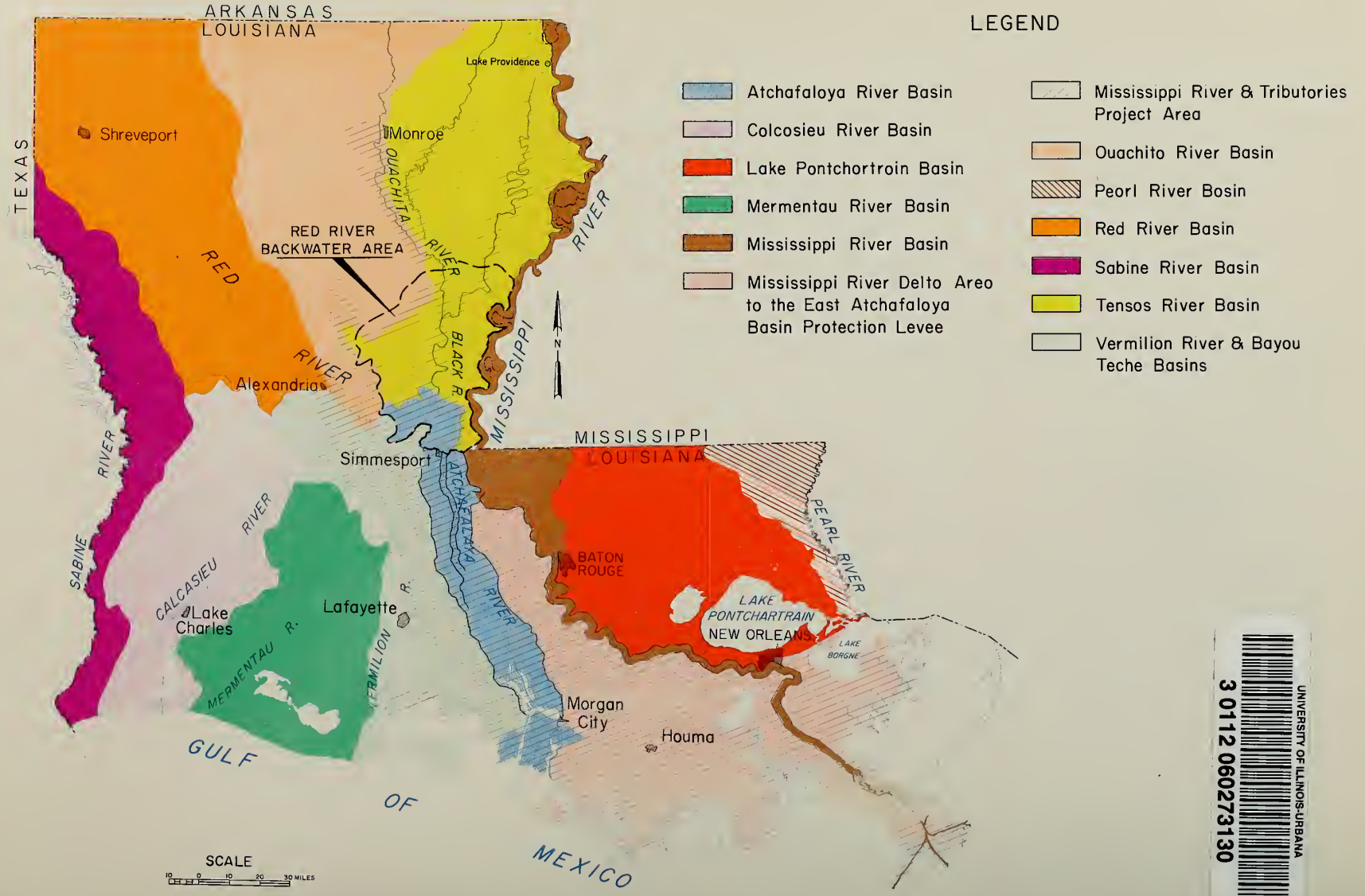
ATCHAFALAYA BASIN IMPROVEMENTS

LEGEND

- Levee
- Interstate Highway
- U. S. Highway
- State Highway
- Railway
- Structure
- Lock
- Gated Culvert
- Closure
- Dam
- Revetment

* Not in Basin improvements

RED RIVER
RED RIVER BACKWATER AREA
OLD RIVER
OLD RIVER CONTROL STRUCTURES (Overbank and Low Sill)
COULEE DES GRUES STRUCTURE
BORDELONVILLE FLOODGATE (STATE OWNED)
BAYOU DES GLAISES CULVERT
FUSE PLUG LEVEE
BAYOU DES GLAISES DIVERSION CHANNEL
ATCHAFALAYA BASIN BANK STABILIZATION
WEST ATCHAFALAYA FLOODWAY
HAMBURG AND COURTABLEAU PIT ENLARGEMENT
MISSISSIPPI
LOUISIANA
MORGANZA FLOODWAY
MORGANZA CONTROL STRUCTURE
POINTE COUPEE DRAINAGE STRUCTURE
UPPER GUIDE LEVEE
LOWER GUIDE LEVEE
HIGH LEVEL HIGHWAY CROSSING
HIGH LEVEL CROSSING
BAYOU DARBONNE DRAINAGE STRUCTURE
BAYOU COURTABLEAU DIVERSION CHANNELS AND CONTROL STRUCTURES
COURTABLEAU DRAINAGE STRUCTURE AND CHANNELS
HIGH LEVEL RY CROSSING
HIGH LEVEL HIGHWAY & RY CROSSINGS
SHERBURNE FRESHWATER DIVERSION STRUCTURE AND CHANNEL (Authorized)
BAYOU COURTABLEAU FRESHWATER DIVERSION STRUCTURE AND CHANNEL (Authorized)
CHARENTON FLOODGATE
CHARENTON DRAINAGE CANAL
EAST FRESHWATER DISTRIBUTION CHANNEL
WEST FRESHWATER DISTRIBUTION CHANNEL
WEST ACCESS CHANNEL
EAST ACCESS CHANNEL
LAKE FAUSSE POINTE
CALUMET FLOODGATES
WAX LAKE OUTLET
ATCHAFALAYA RIVER, BAYOUS CHENE BOEUF AND BLACK (Under construction)
ATCHAFALAYA BASIN FLOODWAY
CLOSED TO NAVIGATION
Mansura
Hamburg
Bunkie
Simmesport
Ville Platte
Melville
Red Cross
Morganza
McKneely
Opelousas
Krotz Springs
Lottie
Port Allen
BATON ROUGE
Plaquemine
Lafayette
Crowley
New Iberia
Jeanerette
Charenton
Franklin
Morgan City
Berwick
SIXMILE LAKE
GRAND LAKE
VERMILION BAY
WEST COTE BLANCHE BAY
EAST COTE BLANCHE BAY
ATCHAFALAYA BAY
GULF OF MEXICO



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